

MATERIAL SUBMITTAL	SUBMITTAL TRADE	SUBMITTAL PACKAGE	SUBMITTAL REFERENCE	REVIEW CYCLE	SUBMITTAL DATE
	MECH	HVAC	DTC-ACE-228-MAT-HVAC-0023	0	09 AUG. 2020

CONTRACT TITLE:	Al Meera Convenience Store at Jeryan Jenaihat Branch	CONTRACT REF:	
FROM (Contractor):	Derwind Trading & Contracting Co.		
TO (Supervision Consultant):	Arab Consulting Engineers (Moharram Bakhom)		

SUBMITTAL TYPE			QUANTITY
☐ Shop Drawings ☐ Coordination Drawings ☒ Product Data ☐ Construction Photographs	☐ Samples ☐ Informational Submittal ☐ Design Data ☐ Test Reports	☐ Certificates ☐ Manufacturer's Instructions ☐ Manufacturer's Field Reports ☒ Other	3 copies with CD

ITEM DESCRIPTION	REMARKS
Material Submittal for REFRIGERANT COPPER PIPES	Supplier: IGTC Brand: MUELLER Country of Origin: USA

☒ Review and Approval
 ☐ Resubmitted for Review and Approval
 ☐ For Information

CONTRACTOR QA/QC:	PROJECT MANAGER:	Mr. Mohamed Talkhan
SUBCONTRACTOR QA/QC:	PROJECT MANAGER:	Engr. Korani Radwan Faisal

COPIES TO: ☐ Consultant ☐ File
 ENCLOSURES TO: ☐ ☐ ☐ ☐

CONSULTANT TO ENTER ACTION CODE AND REMARKS AND RETURN TO CONTRACTOR:

☐ General ☐ Architect ☐ Structure ☐ Mechanical ☐ Plumbing ☐ Electrical ☐ Landscape ☐ Others

☐ Approved ☒ Approved as Noted ☐ Revise and Resubmit ☐ Not Approved

Remarks :

Approved as noted subject to:

- 1- The proposed manufacturer MUELLER - USA is accepted.
- 2- The pipes size selected shall be complying with AC units recommendations.
- 3- Country origin, and test certificates shall be providing along with material on site inspection.
- 4- All pipes, and their fittings shall be engraved with manufacturer brand.
- 5- Provide sample for final approval.
- 6- Contractor shall provide installation method statement for approval before installation starting.

Supervision Consultant's Signature:  Date : 13/08/2020

COPIES TO: ☐ PM Management ☐ Contractor ☐ Consultant ☐ Client ☐ File
 ENCLOSURES TO: ☐ ☐ ☐ ☐

Note: Allow for at least fourteen working days for review.

Form: Submittal



Ref.: DTC-SO/P228/TBTC-SUB/JS/20-156

16th August 2020To: **M/S THE BEST TRADING & CONTRACTING CO. W.L.L.**

Tel: 4480 7345

Fax: 4481 4735

P.O. Box 202278

Doha, Qatar

Attn.: **Engr. Korani Radwan Fisal****Project Manager**Project: **Al Meera Convenience Store at Jeryan Jenaihat Branch**Subject: **Replied Submittals**

Dear Sir,

Reference is made to the above mentioned project, kindly find attached replied submittals as per the details written below;

SN	Submittal Ref.	Subject	Status
1	DTC-ACE-228-MAT-HVAC-023 00	Refrigerant Copper Pipes	Approved as Noted

This is for your information, necessary actions and records.

Regards,


Mohamed Talkhan**Project Manager**


BY: _____

Page 1 of 1



Material Submittal
FOR COPPER PIPES
(MUELLER USA)

**Project Name : Al-Meera Convenience Store Scheme @
Jeryan Jenaihat**

Client Name : Al-Meera Consumer Goods

Consultant : Arab Consulting Engineers (ACE)

Main Contractor : Derwind Trading & Contracting

MEP Contractor : The Best Trading & Contracting

Supplier:

**Innovation Gate Trading &
Contracting Co.W.L.L**

P.O. Box: 202278 Doha-Qatar
Tel.: +974 4480 7345 Fax: +974 4481 4735



FILE INDEX

1. IGTC COMPANY PROFILE (SUPPLIER)
2. COMPLIANCE STATEMENT
3. MUELLER STANDARD
4. PROPOSED PRODUCT CATALOGUE
5. MUELLER CERTIFICATE
6. GENERAL CATALOGUE



IGTC COMPANY PROFILE(SUPPLIER)



COMPANY PROFILE

INNOVATION GATE TRADING & CONTRACTING CO. WLL

SUPPLIER MEP PRODUCT

Email : info@igt.qa & md@igt.qa

T: +974 4414 1964 | F: +974 4414 1637 | P.O. Box: 19107 Doha-Qatar

Barwa Commercial Avenue, Arkan Building, Entrance 1, 2Nd Floor

INNOVATION GATE TRADING & CONTRACTING CO. W.LL

IGT

- Introduction

We Innovation Gate Trading Co., Specialized in Electro-Mechanical Products & services related to the building services industry.

Our group specializes in providing the Engineering solution to our Clientele, we are proud to represent brands who are Industry leaders in the respectively product category

- Vision and Mission

- VISION

To continue being efficient in the field of Trading & Contracting working in an ethical and balanced manner to earn the privilege of being the General Trader & Contractor of choice.

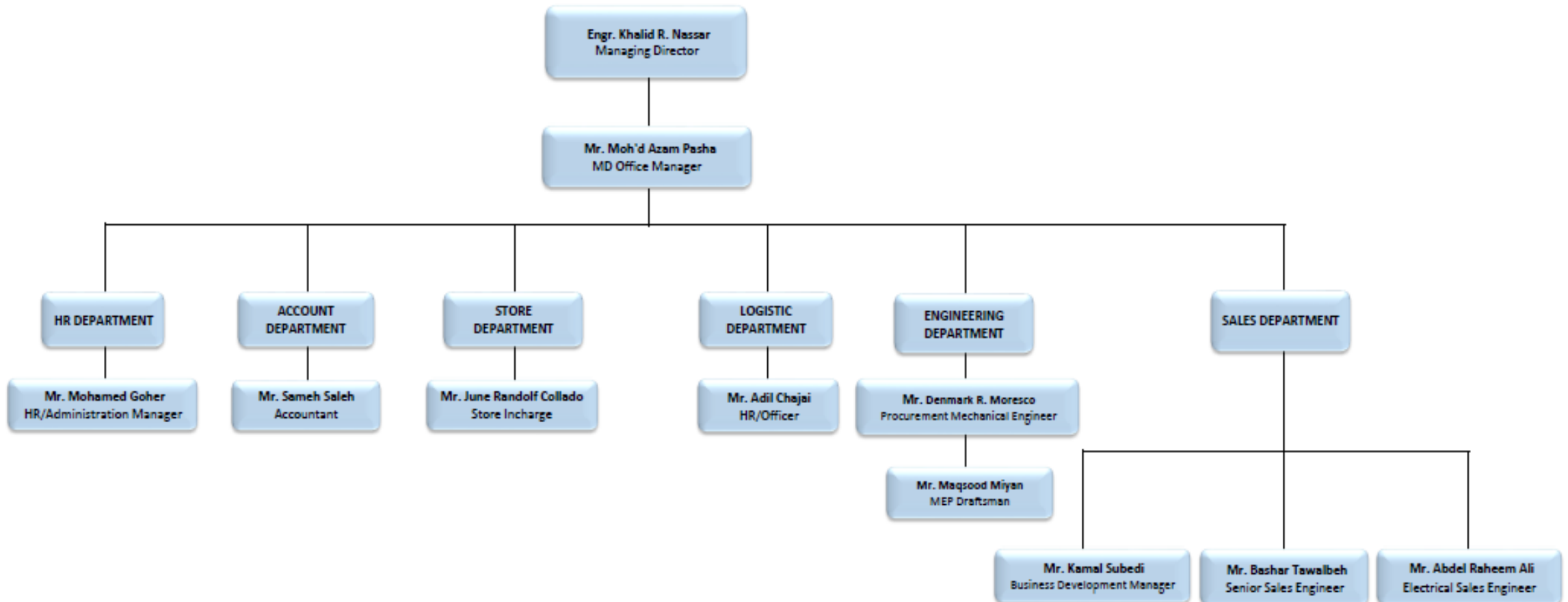
- MISSION

Dedication and Devotion all the way • Excel in every action that strengthens our broad base business relations. • Provide unsurpassed levels of customer services

INNOVATION GATE TRADING & CONTRACTING CO. W.L.L



Organizational Chart



INNOVATION GATE TRADING & CONTRACTING CO. WLL

Our Products Index

1 Valve & PICV & Hook-Up ----- Herz (Made in Austria) www.herz.ae

- HVAC Valve / Ex-Stock
- Chilled Water Valve
- Plumbing Valve
- Gas Valve



2 Air Terminals (Air Outlet) ----- CIC (Made in Jordan) www.cic-jo.com

- Grilles & Registers
- Linear Bar Grille
- Diffusers
- Linear Slot Diffuser
- Flow Bar Diffuser
- Circular Jet Diffuser
- Louvers
- Air Filters
- Gypsum Access Panel
- Accessories



INNOVATION GATE TRADING & CONTRACTING CO. WLL

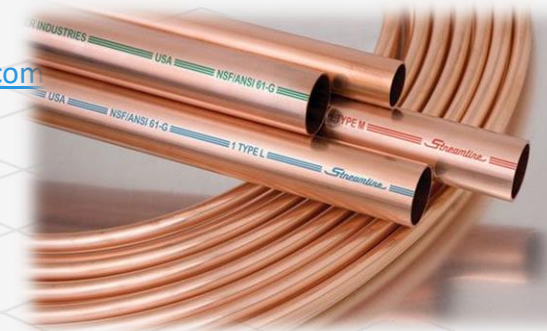
3 Air Conditioning System's ----- / New

- Hygienic Air Handling Units
- Air handling units
- Heat Recovery Devices
- Fan Coil Devices / FCU
- Appliances
- Water Cooling Towers
- Condenser Units
- Water Chillers



4 Copper Pipe & Fittings ----- Mueller USA & Ottocool Turkey) www.anadolubakir.com

- Hard & Soft Drawn Copper Pipe
- Copper pipe Fittings



INNOVATION GATE TRADING & CONTRACTING CO. W.L.L

5

PP-R & PVC & Fittings ----- FIRAT (Made in Turkey) www.firat.com/en-us / New

- Sanitary Piping Systems
- Infrastructure Pipe
- Drainage Pipe Systems
- Rain Gutters
- PVC Hoses



Sewage Piping Systems



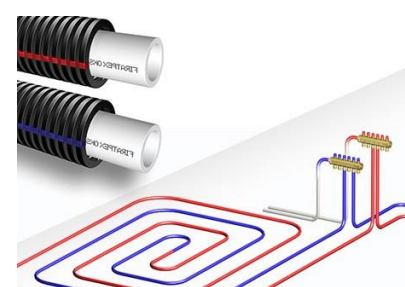
Cold/Hot Water Pipe Systems



Metal Systems



Pex Al Pex Tig Pipe



INNOVATION GATE TRADING & CONTRACTING CO. W.L.L

6

Ferrol Water Heater ----- Ferrol (Made in Italy) www.ferrol.com

A. RESIDENTIAL

- HEATING
- › Boilers
- › Water heaters

B. INDUSTRIAL



Made in ITALY



INNOVATION GATE TRADING & CONTRACTING CO. WLL



7 Indoor & Outdoor Lighting ----- VEKTA (Made in Turkey) www.vekta.com.tr/



Indoor & Outdoor Lighting

- Panel Series
- Decorative Shape Series
- Downlight Series
- Linear Series
- Etange Series
- High-bay Series
- Track Light Series
- Floodlight Series
- Street & Road Series
- Canopy Series
- Park & Garden Series
- Pole Series
- Exproof Series



About VEKTA

Vekta Lighting & Technology Co. is a manufacturer company which has 5000 sqm closed area with its industry experienced production staff with long years of experience.

Vekta Lighting has been established to meet all the requirements of lighting sector especially in LED systems. Both in Turkey and in the international arena, many companies have managed to become a partner in the lighting industry.

VEKTA MISSION

With the developing LED technology, we contribute to the sector by producing long lasting modern lighting fixtures that provide maximum efficiency with minimum energy consumption.

VISION

As a manufacturer company, we become a reliable solution partner all over the world and become an international brand in the lighting industry.



VEKTA

Creative Lighting Products

MANUFACTURER'S AUTHORIZATION

Date: 18.12.2019

To whom it may concern,

VEKTA AYDINLATMA VE TEKNOLOJİ A.Ş. (VEKTA) who is an established and reputable manufacturer of Led Lighting Luminaires having manufacturing facilities at Ömerli Mahallesi Kazan Sokak No7/1 Hadımköy, 34555 Arnavutköy/İstanbul Turkey do hereby confirm that **INNOVATION GATE TRADING CO.** company based in P.O. Box. 19107, Doha - Qatar is our sole distributor for **TWII TOWER J11** project is authorized to be involved with subsequent negotiations relating to and signing Contracts with you for the above goods manufactured by VEKTA. This also applies to after sales servicing and support. Please do not hesitate to contact the undersigned should you require more information or verification.

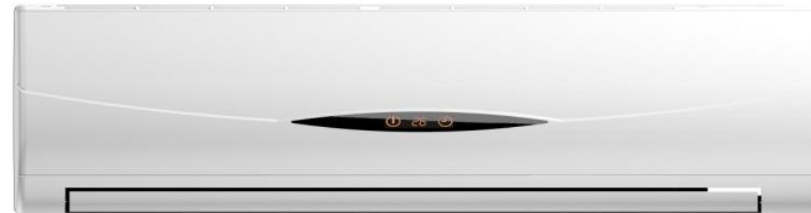
AHMET YENİHAYAT
EXPORT MANAGER

VEKTA Aydınlatma ve Teknoloji A.Ş.
Ömerli Mah. Kazan Sk. No:7/1, Hadımköy
Arnavutköy/İSTANBUL-Tic.Sicil: 401620
T: +90(0)212 798 25 85 F: +90(0)212 798 25 87
Büyükdere V.D 924 085 25 74





About Freshcool



FRESHCOOL was established in 2002 as a company that specializes in air conditioners with a full range of services including supplying different brands of air conditioners, installation and cleaning services for commercial and domestic users.

INNOVATION GATE TRADING & CONTRACTING CO. W.LL

8

DRV / Armstrong ----- Armstrong (Made in Belgium) www.armstronginternational.com



9

Wiring Devices ----- BG (UK – Made in China) www.bgelectrical.uk



10

Rubber Foam Insulation Tubes & Sheets ----- Armacell (Oneflex) (Made in Turkey) www.oneflex.com.tr



11

Gel Connector Junction Box ----- STEAB - Paguro (Made in Italy) www.steab.it



1. Valve & PICV & Hook-

- Automatic Balancing Valves
- Balancing Valves - Cast Iron
- Ball Valves
- Commissioning Centre
- Control Valves, Actuators & Temperature Controllers
- Differential Pressure Controllers
- Flow Controller
- HerzCON / Hook-Up
- Hydraulics in HVAC Applications
- PICV
- Strainer
- Thermostatic valves



About Herz

At present, with a staff of approx. 1600 on its payroll in Austria and abroad, HERZ-Armaturen Ges.m.b.H. Is one of the leading European manufacturers of valves, fittings, circuit regulating valves, dynamic control fittings and thermostatic valves for domestic installations for heating, air conditioning, sanitary and gas appliances. In addition, HERZ is one of the leading producers of biomass boilers and manufacturers of heat pumps.

In 1896 the company, known today as HERZ Armaturen GmbH, was set up through the establishment of the valve factory Gebauer & Lehrner. Herzgasse in Vienna-Favoriten was the first registered office of the company, which later gave the name for the global concern. At present, HERZ trades internationally in over 70 countries from its headquarters in Vienna/Austria. The company offers stability, reliability and continuity with a clearly defined company concept, a thoroughly integrated quality management, competent and motivated co-workers and regular personal contact on all levels.

Decades of experience as well as specializing in the fields of heating and control engineering form the basis of innovation and attractive design for our products. HERZ products cover the entire market for the HVAC industry. All HERZ products are manufactured in EU countries according to the European quality standards.

Education and training are very important for HERZ. Students from vocational and technical high schools, as well as from universities of applied science and construction are frequent guests at our training centres. In education HERZ pays attention not only to the theory but also to the practical application and international network. Since HERZ co-operates with universities in both Europe and Central Asia, the company gives young people the opportunity for international exchange. Therefore HERZ operates as a service provider, as the initial and additional training increases the qualifications of the participants. This was proved by Professor Jauschowitz, the author of the book "The Heart of Heating – Hydraulic Balancing", which has been translated into 13 languages.

HERZ is an Austrian company, which is recognized internationally. We deal with resource-friendly energy supply and ensure an energy-efficient creation of economic and convenient systems.



HERZ Middle East FZE

P.O. Box: 121310

Warehouse Q3 #061,

SAF Zone, Sharjah, UAE

Phone: +971 (0)6 55 28 108

Fax: +971 (0)6 55 28 109

Email: office@herz.ae

<http://www.herz.ae>

Ref: HERZ/2017/01

Date: 01 - March - 2017

AUTHORIZATION LETTER OF DISTRIBUTION

HERZ MIDDLE EAST LLC ("Hereafter called HERZ") hereby names INNOVATION GATE TRADING CO ("Hereafter called INNOVATION GATE") as its authorized Distributor to promote our product range in QATAR Markets. By signing this letter, HERZ hereby authorizes INNOVATION GATE to offer our products and services in these markets. Their contact details are as under.

INNOVATION GATE TRADING CO.

P.O.Box: 19107 Doha-Qatar

Tel.: +974 44141 964 Fax: +974 44141 937

Contact Person: Mr. Khalid Nassar (+974 3333 6694)

As HERZ business partner, we hereby confirm that we will provide INNOVATION GATE our complete support for projects or business development in above said region involving our products and for the after sales services.

INNOVATION GATE to inform HERZ about the project details they are working on well in advance. HERZ shall review the project details and provide their consent to proceed.

This agreement allows INNOVATION GATE to promote our products for the period of One year from the above stated date and is subject to performance of INNOVATION GATE and needs to be renewed after expiration.

Sincerely,

For **HERZ MIDDLE EAST LLC**

VUAY DHUTALE
DIVISIONAL MANAGER



INNOVATION GATE TRADING & CONTRACTING CO. W.L.L



2. Air Terminals

- Ceiling Diffusers
- Grills & Registers
- Linear Slot Diffusers
- Linear Bar Grills & Registers
- Perforated Exhaust Louvers
- Sand Trap Louvers
- Variable Air Volume Control



About CIC

Cooling Industries has been established in 1979 with great vision to produce the highest quality products, and in order to achieve this purpose we started in 2004 the process of product certifications according to ASHRAE, AMCA, ADC and ISO standards for our major products (Diffuser, Linear Slot Diffuser and Grilles), and we extended our efforts to cover most of our products (Bar Grille, Circular Diffuser, Louvers, Disc Valves and Door Grilles...etc.) in 2008. Certification was obtained by ETL labs in New York USA.

In our manufacturing process we start our procedures by using the highest quality raw material of extruded Aluminum (6063-TS), with our unique protected CIC profiles, our powder coating is done in house with 5 stages of treatment prior to final furnace treatment, painting material is used from Jotun as standard for all painting jobs. Our technicians are highly qualified with experience of 15 years on average, highly qualified engineering department controls the manufacturing procedures and quality control. And all of above is supported by professional customer care team.

Through the years we have been able to gain clients trust and our products have been approved by most of the well known international consultants, and accordingly our project reference list grew rapidly to cover many land marks and big projects in the region, recently we signed the contract for Doha Bank and Doha Hilton Hotel in Qatar, In Jordan we are the supplier for Air outlets for Jordan Gates project and in Nigeria we are supplying Crown Plaza Hotel in Lagos Airport .

Currently, CIC is implementing ISO standards for administration and managerial organization and it is in the process of acquiring certification. CIC has equipped itself to expand its sales operations and manufacturing capabilities to cover the markets of the Middle East, Africa, Asia and Europe.

Our technical catalogue is update with all of our standard products , it is available in both hand and soft copies.

CIC PLAN,...

Our plan is to manufacture products with high quality and Performance to meet our customer's requirement. We are looking forward to be pioneers in our Industry with the purpose of achieving high customer satisfaction level by continuous improvement.

CIC SISTER COMPANIES,...

In addition of CIC industrial activities ,it has sister industrial, trading, and contracting companies which adds to our ability to provide all the nessecary equipment and assistance for your projects :-

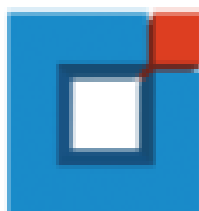
- 1 - PETRA - Engineering Industrial Co.- manufacturer of high quality commercial and industrial HVAC equipment.
- 2 - ACE - Supplies & Trading Co.- A leading electro-mechanical materials suppliers in Jordan and the region.
- 3 - Ahmad Badawieh Est. – Grade 1 Electromechanical Contractors in Jordan with a division for Maintenance & another for testing & balancing – Achieved Public Works Ministry prize for Carrefour – City Mall – Amman project in 2009.
- 4 - MENASCO – Mechanical Contracting (L.L.C.) - Electromechanical contractors in the UAE, with division for Maintenance.

Cooling Industries Company

P. O. Box 381 , Amman 11623 Jordan

Tel. 00962-6-4028500 Fax. 4028500

Email: info@cico-jo.com



Web site : www.cico-jo.com

شركة صناعة التبريد

ص.ب. 381 / عمان 11623 الأردن

هاتف 4028500 فاكس 4028500

بريد إلكتروني : info@cico-jo.com

Date: 6/4/2018

Air Outlets Dealership Certificate

**Cooling Industries Co. LTD.
Have pleasure in appointing**

INNOVATION GATE TRADING CO.

P.O.Box: 19107 Doha-Qatar
Tel.: +974 44141 964 Fax: +974 44141 937

**As Authourised Dealer for sales of CIC products in
QATAR Market.**

Sales Manager
Mr. Sami Deeb

Cooling Industries Co. LTD.



This Certificate is Valid for one Year from the date of issue.

3. Mieller Copper Pipe

- HVACR
- PLUMBING
- CO2 REFRIGERATION
- MEDICAL GAS
- SPECIALTY



About Mueller USA

Mueller Streamline Co. is a company of Mueller Industries, Inc. that provides products supporting the plumbing, HVAC, refrigeration, PVF, and other markets. Headquartered in Collierville, TN, the company's flagship products are Streamline® copper tubing, line sets, copper fittings, valves, and related items. Mueller Streamline Co. also sells other Mueller Industries companies' brands, representing a wide assortment of products such as refrigeration valves, HVAC/R protection devices, brass flare fittings, iron fittings, steel pipe, plastic tubing and fittings, plumbing valves, plumbing specialties, and more.



ONYX TECHNICAL SUPPLIES (FZE)

P.O.Box 7838
Sharjah - UAE

Tel : (971 -55) 902 0 269
Email : noon@onyxin.com

To: **Innovation Gate Trading CO**
Attn: **Mr. Khalid Nassar**

Date: 4/08/2020
Ref.#: 040820IGT

Onyx Technical Supplies FZE ("Here after called Onyx") hereby names Innovation Gate Trading CO. ("Here after called Innovation Gate") as it is authorized distributor to promote our Mueller copper tubes and fittings - USA in Qatar market. By signing this letter, Onyx hereby authorizes Innovation Gate to offer our Mueller copper tubes and fitting- USA in Qatar market. There contact details are as under:

Innovation Gate Trading CO.
P.O BOX: 19107 Doha, Qatar
TEL: +974 44141 964 FAX: +974 44141 937
Contact person: Mr. Khalid Nassar (+974 3333 6694)

As Onyx business partner, we hereby confirm that we will provide Innovation Gate our complete support for business development in above said region involving our products and for the after sales services.

This agreement allows Innovation Gate to promote our Mueller products for the period of Six Month from the bove stated date.



Regards

Onyx Technical Supplies FZE

INNOVATION GATE TRADING & CONTRACTING CO. WLL

3. Air Conditioning System's

- Hygienic Air Handling Unit
- Air handling Unt
- Heat Recovery Units
- Fan-coil Units
- Unit Heaters
- Water Cooling Towers
- Condensing Units
- Water Chillers



About

INNOVATION GATE TRADING & CONTRACTING CO. WLL

4. PP-R & PVC & Fittings

- Infrastructure Pipe
- Drainage Pipe Systems
- Rain Gutters
- PVC Hoses



About FIRAT

Firat was established to carry out production in the field of plastic building materials in the year 1972. Firat, which always sets out with the principles of quality production and product diversity, has succeeded in becoming both the leading establishment of the sector and the export leader of the sector as a result of significant enterprises that have taken years.

In its production Firat targets various sectors such as construction, agriculture, automotive, medical, domestic appliances sectors with its plastic-based products. It realizes its production targeting those sectors in its modern factories in Büyükçekmece-İstanbul and Sincan-Ankara which have a total area that reaches 750,000 m². Firat owns one of the three biggest plastic production complexes in Europe.

As of 2018 the number of personnel working in the constitution of Firat is 1850. Firat which believes that the most valuable element is human always organizes in-service trainings with the aim of enhancing work experience of its employees and building up their corporate knowledge.

5. RESIDENTIAL

■ HEATING

- > Boilers
- > Water heaters

B. INDUSTRIAL



About ferrol

From the company's original head office in San Bonifacio, near the Italian city of Verona, where it was founded by Dante Ferrol in 1955, Ferrol now operates in 14 countries across Europe and Asia. For 60 years, the company's objective has been to drive innovation in the heating industry to produce appliances that are highly energy efficient, superbly built and suited to a very wide range of specifications.

The UK operation began in the late 1980s when the UK export market was identified as being a promising one. In 1988 Ferrol joined forces with Brassware Sales, a company based in Minworth, West Midlands, which was importing heating products from Italian manufacturers, and they took on the name Brassware Ferrol. The success of this joint venture proved the UK market to be a viable one and in 1997, after nine years of continued growth, the two companies went their separate ways and Ferrol UK Ltd was established. By keeping a very keen eye on what the market demanded and ensuring that it kept pace with its competitors, Ferrol UK swiftly expanded until it outgrew the Minworth premises and relocated to the current site in Burton-upon-Trent, Staffordshire in January 2001. By this stage, Ferrol had identified its key aim as being to supply the UK independents market and this remains a major focus of the company's operations today.

Driving the development of Ferrol's range of domestic and commercial boilers and renewable energy products is the two-pronged catalyst of relentless consumer demand for better products and the need to address climate change. It's these factors, which are at the same time both complementary and conflicting, that keep Ferrol at the leading edge of appliance design. One of Ferrol's biggest strengths is self-sufficiency: from the initial concept through to design, manufacturing and marketing, Ferrol's products are produced entirely in-house, with only a very small percentage of components being sourced from elsewhere. This allows for complete control over the quality, delivery and all-important after-sales aspects of all Ferrol's products.

Ferrol has brought many innovative heating appliances into the marketplace, from high efficiency domestic combi, system and open vent boilers to a wide range of renewable products, including complete solar systems, plus an extensive range of commercial boilers.



COMPLIANCE STATEMENT



IGT COMPLIANCE FOR AL MEERA CONVENIENCE STORE SCHEME
Refrigerant Piping Specifications

	MECHANICAL SPECIFICATIONS Refrigerant piping specifications PAGE 48 , SEC 3.3.8	IGT Response (MUELLER BRASS)
1-	Refrigerant piping shall be furnished and installed in accordance with the recommendations of the equipment manufacturer. Each system shall include pipeline vibration isolators at the condensing unit, liquid line solenoid valve, liquid line sight glass, filter- dryer, charging valve and relief valve. Refrigerant pipe sizes and arrangement shall be determined by the equipment manufacturer who shall guarantee the operations of each condensing unit as one system. Contractor shall submit shop drawings for piping arrangement and sizing for approval.	COMPLY – any items required to install in the refrigeration pipe line should provide by the equipment supplier with clear installation details. same as liquid line solenoid valve, liquid line sight glass, filter- dryer, charging valve and relief valve... etc ,
2-	Refrigerant piping shall be tested with carbon dioxide or nitrogen to 2100 KPa to high side and 1050 KPa in low side. System shall be free from leaks when tested with halide torch method or with electronic leak detector. All leaks in soldered joints shall be repaired by completely disassembling joint, cleaning and resoldering.	COMPLY
3-	After piping has been tested for leaks, the entire system shall be evacuated by vacuum pump to an absolute pressure reading of 1.7 KPa. After charging system with refrigerant and oil, the system shall be operated for a period of 8 hours and adjusted so that all parts are operating under normal pressure and all pressure regulating or safety devices (except relief valves) shall be tested to see that they are set and operating properly	COMPLY

	Construction, Completion and Maintenance of the proposed Al Meera New Build Convenience Store at Rawdat Al Hamama - Schemes 2016		Form No. P07-F10 / Rev. 01 / Feb. 2012
	Project Name Convenience Store at Rawdat Al Hamama - Schemes 2016	Project No. 1083-14	Main Contractor 

MATERIAL APPROVAL REQUEST (MAR)

Submittal Contents: ☐ Material/Sample ☐ Mock-up ☒ Catalogue/Brochure ☐ Others	MAP No. ITCC/1083-14/AEB/HVAC/MAR/0031 Rev. 1
TECHNICAL SUBMITTAL - SOFT COPY	Date Submitted: 3-Jun-19

Trade / Discipline: ☐ Civil ☐ Architectural ☐ Electrical ☐ Information Tech. (IT) ☐ Structural ☒ Mechanical ☐ Plumbing ☐ Others: Hvac ☐ Landscape ☐ Interior Design	Date Required on Site: _____ Production Period: _____ Total Delivery Time: _____ Expected Arrival on Site: _____
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To be within milestones forecast completion

Description of Material / Equipment:  REFRIGERENT PIPES 
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References: a.) Specs. Ref: Volume C3 Sec-22.2.18 b.) Drawing Ref: N/A c.) BOQ Ref: N/A Others: ITCC/1083-14/AEB/HVAC/MAR/0031	c.) GCS 2014 Ref: N/A d.) Statutory Req: N/A e.) Specified vendors List: volume - C3 section -22.2.18
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Manufacturer / Supplier Details: ☐ Locally Manufactured ☒ Imported	Country of Origin: USA
a.) Local Supplier / Agent: Company Name: INNOVATION GATE TRADING CO. Address / Contacts: QATAR	b.) Manufacturer: Company Name: MUELLER Address / Contacts: USA

Prepared by: (Contractor's PE or CM) Noor-ul-Haq NOOR UL HAQ (Mechanical Engineer-ITCC) Name / Sign / Date: _____	Verified by: (Contractor's QA/QC, QS, or Proj. Coordinator) Noor-ul-Haq NOOR UL HAQ (Mechanical Engineer-ITCC) Name / Sign / Date: _____	Recommended for Approval by: (Contractor's PM) Mohammed Hussein Mohammed Hussein (Project Manager) Name / Sign / Date: _____
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COMMENTS BY THE CONSULTANT

MECH. (R)

- 1- Proposed Supplier and Manufacturer / Origin is accepted
- 2- Manufacturer recommendation shall be followed for installation
- 3- Consider quantity requirements for Receiving Area in the technical schedule.
- 4- Refer to comments in specs. compliance statement to be followed.

Submittal Status: ☐ A - Approved ☒ B - Approved as Noted ☐ C - Revise and Resubmit ☐ D - Rejected	
Supervision Consultant Signature:  Name & Signature: _____ RE or Senior Engineer: _____ Designation: _____	Client Approval / Endorsement (when required):  Name & Signature: _____ Project Manager: _____ Designation: _____ Date: 10-06-19

26. LIST OF PROPOSED MATERIALS MANUFACTURERS – HVAC

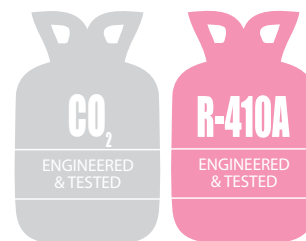
	ITEM	MANUFACTURERS			
		(1)	(2)	(3)	(4)
1.	Chillers	CARRIER (USA / EU)	YORK (USA / EU)	TRANE (USA / EU)	McQUAY (USA / EU)
2.	Chilled Water pumps	ITT (USA)	PATTERSON (USA)	ARRORA (USA)	TACO (USA)
3.	Pipes & Fittings	YORKSHIRE (UK)	WEDNESBURY (UK)	MUELLERBROS (USA)	ECONOSTO (EU)
4.	Fancoil Units	CARRIER (USA / EU)	YORK (USA / EU)	TRANE (USA / EU)	EUROCLIMA
5.	Air Handling Units	CARRIER (USA / EU)	YORK (USA / EU)	TRANE (USA / EU)	PETRA
6.	Exhaust Fans	GREENHECK (USA)	FLAKTWOODS (UK)	ELTA (UK)	SYSTEMAIR (GERMANY)
7.	Split A/C Unit	CARRIER (USA / EU)	YORK (USA / EU)	TRANE (USA / EU)	MITSHUBISHI (JAPAN)
8.	Variable Frequency Drive	SIEMENS	ABB	SCHNIDER	
9.	Ducts and Accessories	KAWASAKI (JAPAN)	JINDAL STEEL (INDIA)	THERMAL FLEX (THAILAND)	DYN AIR (EU)



Mueller Streamline Co.
8285 Tournament Drive, Suite 150
Memphis, TN 38125
P 901.753.3200

R-410A/CO₂ Refrigerant Applications
Copper Tube & Fittings
Air-Conditioning & Refrigeration Applications

c **UL** **US**
700 PSI **R410A**



December 18, 2012

Mueller Streamline Co. proudly offers copper tube and fittings in compliance with the applicable ASTM/ASME specifications. Also, following years of additional testing, the company is able to offer the industry's first copper tube and fittings UL Recognized to 700 PSI (48 Bar), as identified in Table A below. The testing and third-party certification validates performance of these products to operating pressures of 700 PSI at 250°F.

TABLE A: Copper Products UL Recognized to 700PSI (48 Bar)

Product Line	Type	Diameter
Copper Tube	• Streamline Refrigeration Service Coils	1/8" – 1-1/8"
	• Streamline Line Sets & Mini- Splits	1/8" – 1-1/8"
	• Streamline ACR – Type L (Hard Lengths)	1/8" – 1-3/8"
	• Streamline ACR – Type K (Hard Lengths)	1/8" – 2-5/8"
Copper Fittings	• Streamline Wrot Solder Joint Pressure	1/8" – 2-5/8"

For your most demanding applications, Mueller Streamline Co. is able to provide the operating pressure ratings beyond 700PSI (48 Bar) across key refrigerant piping sizes, as identified in Table B below.

TABLE B: Operating Pressures for Hard Tube and Wrot Fittings

Diameter	PSI (Bar) @ ≤ 68°F	PSI (Bar) @ 180°F	PSI (Bar) @ 250°F
1/8" to 1/2"	1370 (94.5)	1320 (91.0)	1170 (80.6)
5/8"	1370 (94.5)	1320 (91.0)	1170 (80.6)
7/8"	1000 (68.9)	975 (67.2)	850 (49.6)
1-1/8"	840 (57.9)	800 (55.1)	720 (48.3)
1-3/8"	800 (55.1)	770 (53.1)	700 (41.4)

As new technologies and refrigerants emerge, Mueller Streamline Co. is committed to being a resource to our customers and ensuring that our products are safe and reliable. If you have any product questions or wish to design a system above 700psi, please contact your sales representative.

Sincerely,

Charles A. Stout P.E.

Charles A Stout, PhD PE
Director of Research and Development
castout@muellerindustries.com



MUELLER STANDARD



Mueller Streamline Co.
8285 Tournament Drive, Suite 150
Memphis, TN 38125
P 901.753.3200

STANDARD COPPER TUBE

Mueller Copper Tube products are manufactured in the USA. All tubing produced in Fulton, MS, and Wynne, AR, is seamless and of UNS C12200 grade of copper and is manufactured to meet the chemical, mechanical, cleanness, and eddy current testing requirements of the applicable ASTM specifications set forth below.

Although Mueller Copper Tube strives to meet all requirements specified in ASTM, Standard Tube may not fully meet ASTM dimensional requirements. Standard Tube will be provided unless Certified Tube is clearly defined on the Purchase Order. When specified at order placement, Mueller Copper Tube can supply Certified Tube to meet all requirements of the current applicable ASTM specification, at an additional cost.

- Streamline Copper Water Tube (Types K,L,M) is produced in accordance with, ASTM B88 and ANSI/NSF 61 **
- Streamline Copper Refrigeration Service Coils are produced in accordance with ASTM B280
- Streamline Nitrogenized ACR Hard Drawn Copper Tube is produced in accordance with ASTM B280
- Streamline Copper Drainage Tube (DWV) is produced in accordance with ASTM B306
- Oxygen & Medical Service Tube - To ASTM B819 (Types K & L) Hard Drawn Straight Lengths Only in accordance to CGA Cleanness Specification; CGA G4.1 (Compressed Gas Association); & NFPA 99 (Health Care Facilities).

** NSF 61 Restriction Statement Copper Tube (Alloy C12200) is certified by NSF to ANSI/NSF Standard 61 for public water supplies meeting or in the process of meeting the U.S. EPA Lead and Copper Rule (56FR 26460, June 7, 1991). Water supplies with pH less than 6.5 may require corrosion control to limit copper solubility in drinking water."

Last revision: March 11, 2011



Mueller Streamline Co.
8285 Tournament Drive, Suite 150
Memphis, TN 38125
P 901.753.3200

Date: May 17, 2017
Subject: **Product Standards - Copper Fittings**

Mueller Fittings Co. Inc. manufactures or supplies product which are manufactured to meet the following specifications.

STANDARDS:

- ASME B16.22: Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
- MSS SP-104: Wrought Copper Solder Joint Pressure Fittings
- ASME B16.29: Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings - DWV
- ASME/ANSI B16.18: Cast Copper Alloy Solder Joint Pressure Fittings
- ASME/ANSI B16.15: Cast Bronze Threaded Fittings
- ASME/ANSI B16.23: Cast Copper Alloy Solder Joint Drainage Fittings DWV
- ASME/ANSI B16.26: Cast Copper Alloy Fittings for Flared Copper Tube
- NSF/ANSI 61-G: Drinking Water System Components
- MSS SP-106: Class 150-Cast Copper Flanges shall meet the requirements of MSS SP-106 and/or the workmanship and dimensional of Federal Spec. VWW-F-406 ASME B16.24.
- MSS SP – 106: Class 125 Bronze Pipe Flanges and Flanged Fittings
- MSS SP – 109: Welded Fabricated Copper Solder Joint Pressure Fittings
- MSS SP - 123: Threaded and Solder Joint Copper Unions

The materials used to manufacture these fittings are also in compliance with the following specifications:

Products Made From Sheet:

- ASTM B152 Alloy C11000: Standard Specification for Copper Sheet, Strip, Plated Rolled Bar Cast Products
- ASTM B584 Alloy C84400: Standard Specification for Copper Alloy Sand Castings
 - Or Alloy C87850: General Applications: Federal Specification VWW-U-516
 - Or Alloy C87600: Type III, Class A and B Copper Alloy Unions
 - Or Alloy C89836: General Applications

Copper Fittings:

- ASTM B75 Alloy C12200: Standard Specification for Seamless Round, Copper Tube*
 - Or Alloy C10200: General Engineering applications

Copper [tube or fitting] UNS C122000 has been evaluated by NSF International to NSF/ANSI 61 for use in drinking water supplies of pH 6.5 and above. Drinking water supplies that are less than pH 6.5 may require corrosion control to limit leaching of copper into the drinking water.



PROPOSED PRODUCT CATALOGUE

COPPER TUBE FOR HVACR APPLICATIONS

Job Name	Contractor
Job Location	Wholesaler
Engineer	Streamline® Rep

Product Description:

Streamline® Service Coils, ACR/Nitrogenized straight-length or line set copper tube for use in refrigeration applications. Available sizes ranging from 1/8" to 8-1/8" in outside diameter. All tube should be manufactured in the United States.

Material:

Streamline® Copper Tube is manufactured from UNS C12200 grade of copper.

Key Specifications:

Streamline® Copper Refrigeration Service Coils, ACR/Nitrogenized straight lengths and line sets are made to meet the chemical, mechanical, cleanliness, and eddy current testing requirements of the applicable specification of ASTM B280. Streamline® copper tube is third party verified in select sizes¹ through Underwriters Laboratories (UL) for operating pressure of 700psi at 250°F.

Installation:

Installations shall comply with the latest applicable building codes for the local jurisdiction. For detailed installation instructions, consult the Copper Development Association at copper.org.

References:

1 Product Line	Product Type	Diameter
	Streamline® Refrigeration Service Coils	1/8" – 1-1/8"
	Streamline® Line Sets & Mini-Splits	1/8" – 1-1/8"
	Streamline® ACR - Type L (Hard Lengths)	1/8" – 1-3/8"
	Streamline® ACR - Type K (Hard Lengths)	1/8" – 2-5/8"

ASTM B75	Seamless Copper Tube
C12200	99.9% Pure Copper
ASTM B280	Seamless Copper Tube for Air Conditioning and Refrigeration



COPPER TUBE DATA

Mueller Industries' cleaning, purging and pressurizing process assures the high level of tube cleanliness in conformance to ASTM B280, the refrigeration industry standard. The tube is sealed with plugs which maintain the standard of cleanliness from the factory to the job site.

STREAMLINE® COPPER TUBE PRESSURIZED WITH NITROGEN provides maximum protection against the formation of harmful oxides normally formed during brazing operations. Reduction of these oxides greatly reduces system contamination. Plugs are reusable. When less than a 20' length of tube is required for an installation the unused length of tube may be re-plugged to prevent atmospheric contamination during storage.

STREAMLINE® NITROGENIZED seamless copper tube is available in sizes 3/8" OD through 3-1/8" OD. Larger sizes from 3-5/8" OD through 8-1/8" OD are cleaned and capped. Manufactured and cleaned in accordance with ASTM B280. 20-ft. lengths hard drawn - cleaned and capped - color coded - Marked "ACR/MED"

TYPE K NITROGENIZED ACR / MED

RATED WORKING PRESSURE (PSIG)

O.D. DIA.	WT/FT	150°F	200°F	250°F	300°F	400°F
3/8	0.145	913	877	860	842	537
1/2	0.269	960	923	904	885	565
5/8	0.344	758	728	713	698	446
3/4	0.418	700 †	700 †	700 †	577	368
7/8	0.641	700 †	700 †	700 †	668	426
1 1/8	0.839	700 †	700 †	700 †	513	327
1 3/8	1.04	700 †	700 †	700 †	416	266
1 5/8	1.36	700 †	700 †	700 †	387	247
2 1/8	2.06	700 †	700 †	700 †	341	217
2 5/8	2.93	700 †	700 †	700 †	312	199
3 1/8	4	328	315	308	302	193
3 5/8	5.12	311	299	293	286	183
4 1/8	6.51	306	294	288	282	180
5 1/8	9.67	293	281	276	270	172
6 1/8	13.9	295	283	277	271	173
8 1/8	25.9	314	301	295	289	184

TYPE L NITROGENIZED ACR / MED

3/8	0.126	777	747	731	716	457
1/2	0.198	700 †	700 †	700 †	612	391
5/8	0.285	700 †	700 †	700 †	567	362
3/4	0.362	700 †	700 †	700 †	496	316
7/8	0.455	700 †	700 †	700 †	457	292
1 1/8	0.655	700 †	700 †	700 †	388	248
1 3/8	0.884	700 †	700 †	700 †	344	220
1 5/8	1.14	348	334	327	320	205
2 1/8	1.75	309	297	291	285	182
2 5/8	2.48	286	275	269	263	168
3 1/8	3.33	270	259	254	249	159
3 5/8	4.29	258	248	243	238	152
4 1/8	5.38	249	240	235	230	147
5 1/8	7.61	229	229	215	211	135
6 1/8	10.2	213	213	201	196	125
8 1/8	19.3	230	230	216	212	135

Tables give computed allowable stress for annealed copper tube at indicated temperature.

† UL Recognized to 700 PSI (select sizes)

A BRAND OF MUELLER INDUSTRIES 

COPPER TUBE DATA

REFRIGERATION SERVICE TUBE

STREAMLINE® dehydrated and nitrogen purged and sealed copper tube is of a consistent annealed temper, bright and thoroughly dried and packaged in individual cartons. Each carton is clearly labeled showing size and length.

Tube is manufactured in accordance with ASTM B280 and ANSI B9.1, refrigeration industry standards. For special lengths and sizes not listed please consult your local Mueller Industries representative.

COILS

SIZE	RATED INTERNAL WORKING PRESSURE (PSIG)				50 FEET		SHIP INFO	100 FOOT	
	O.D.	150°F	200°F	350°F	400°F	COIL DIA	WT/COIL	COL DIA	WT/COIL
1/8	2613	2459	2049	1537	10 3/4	1.74	10	17	3.48
3/16	1645	1548	1290	968	11 3/4	2.88	10	18 5/8	5.76
1/4	1195	1125	938	703	13 1/2	4.02	10	18 5/8	8.04
5/16	1017	957	798	598	15 1/2	5.45	10	19 7/8	10.90
3/8	836	787	656	492	17	6.70	10	21 7/8	13.40
1/2	700 †	700 †	485	363	19 7/8	9.10	5	25	18.20
5/8	700 †	700 †	412	309	21 1/4	12.55	5	25 1/4	25.10
3/4	700 †	700 †	341	256	23 1/4	15.25	3	29	30.50
7/8	700 †	700 †	388	291	27 1/4	22.75	3	32 1/4	45.50
1 1/8	700 †	700 †	330	247	34 1/2	32.75	-	38 1/2	65.50
1 3/8	373	351	293	219	45	44.20	-	45	88.40
1 5/8	347	327	272	204	45	57.00	-	49	114.00

† UL Recognized to 700 PSI (select sizes)

TECHNICAL DATA

Values of allowable internal working pressure for copper tube in service are based on the formula from ANSI B31, Standard Code for Pressure Piping:

$$P = \frac{2 S tm}{D_{max} - 0.8 tm}$$

P = Allowable Pressure	@ 150°F S = 5100 PSIG annealed
S = Allowable stress	@ 200°F S = 4800 PSIG annealed
T = Wall thickness	@ 300°F S = 4700 PSIG annealed
D Max = Outside Diameter	@ 400°F S = 3000 PSIG annealed

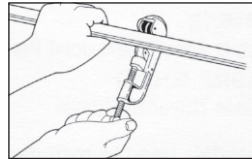
All ratings listed for types K, L, M, DWV and refrigeration service tube in the preceding charts are calculated for tube in the annealed condition. These values should be used when soldering, brazing or welding is employed for joining components in a system. While the ratings for hard drawn tube are substantially higher, they should only be used for systems using properly designed flare or compression mechanical joints, since joining by any heating process might anneal (soften) the tube.

In designing a system, careful consideration should also be given to joint ratings as well as those of the components.

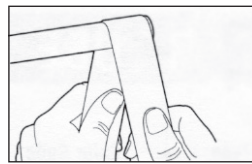
COPPER TUBE AND SOLDER TYPE FITTINGS

1. Cut tube square with the cutter or fine hack saw (32 tooth blade is recommended). Remove Burr.
2. Clean outside end of copper tube thoroughly with sand cloth or sandpaper equal depth of fitting. Leave no dark spots.
3. Clean inside of fitting carefully to tube stop with wire brush. Note: Sand cloth or sandpaper may also be used.
4. Using a brush, apply light uniform coat of soldering flux to the outside of the tube and inside of the fitting.
5. Slip tube into fitting to tube stop. Turn tube back and forth once or twice to distribute flux evenly.
6. Apply heat uniformly around the fitting with torch. When solder melts upon contact with heated fitting, the proper soldering temperature has been reached. Remove flame and feed solder slightly off center at the bottom of the joint. Proceed across the bottom of the fitting and up to the top center position. Return to the starting point, and then proceed up the incomplete side to the top, again, overlapping the solder metal. Wipe off surplus solder with a piece of cloth.

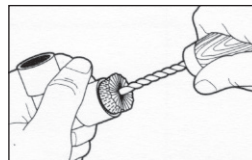
CAUTION: No not overheat the joint or direct the flame into the face of the fitting cup. Overheating could burn the flux, which will destroy its effectiveness and the solder will not enter the joint properly.



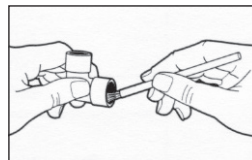
1. Cut tube to length & remove burr with file or scraper.



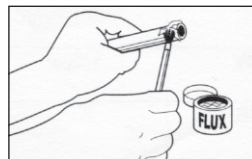
2. Clean outside of tube with sandpaper or sand cloth.



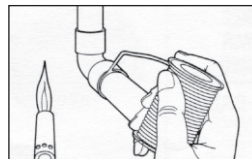
3. Clean inside of fitting with wire brush, sand cloth or sandpaper.



4. Apply flux thoroughly to inside of fitting.



5. Apply flux thoroughly to outside of tube - assemble tube and fitting.



6. Apply heat with torch. When solder melts upon contact with heated fitting, the proper temp for soldering has been reached. Remove flame & feed solder to the joint at one or two points until a ring of solder appears at the end of the fitting.

COPPER FITTINGS FOR HVACR APPLICATIONS

Job Name	Contractor
Job Location	Wholesaler
Engineer	Streamline® Rep

Product Description:

Streamline® Wrot Copper fittings for use in refrigeration applications. Available sizes ranging from 1/4" to 8-1/8" in outside diameter. Product is designed to join ASTM B280 and ASTM B88 seamless copper tube.

Material:

Streamline® Wrot Copper fittings shall be made from material in compliance with ASTM B75 and of UNS C12200 grade of copper.

Key Specifications:

Streamline® Wrot Copper, solder-joint, pressure fittings shall conform to ASME B16.22 and MSS SP104. Streamline® Wrot Copper, solder-joint, pressure fittings are third party verified in select sizes¹ through Underwriters Laboratories (UL) for operating pressure of 700psi at 250°F.

Installation:

Installations shall comply with the latest applicable building codes for the local jurisdiction. For detailed installation instructions, consult the Copper Development Association at copper.org.

References:

Product Line	Product Type	Diameter
1 Copper Fittings UL C US 700 PSI R410A	Streamline® Wrot Solder-Joint Pressure	1/8" – 2-5/8"

*700PSI at 250°F in select patterns

ASTM B75	Seamless Copper Tube
C12200	99.9% Pure Copper
ASME B16.22	Wrot Copper and Copper Alloy Solder Joint Pressure Fittings
MSS SP104	Wrot Copper Solder and Joint Pressure Fittings

Other Applicable Standards

ASTM B88	Seamless Copper Water and Gas Tube (Types K, L, M)
ASTM B280	Seamless Copper Tube for Air Conditioning and Refrigeration

COPPER FITTING DATA

TEMPERATURE - PRESSURE RATINGS OF SOLDER JOINTS					
ALLOYS USED FOR JOINTS	SERVICE TEMPERATURE °F	STANDARD TUBE SIZE, TYPES K, L, AND M			
		WATER AND NON-CORROSIVE LIQUIDS & GASES			
		1/4 to 1	1-1/4 to 2	2-1/2 to 4	5 to 8
50 / 50 Tin Lead Solder Not to be used in potable water systems	100	200	175	150	135
	150	150	125	100	90
	200	100	90	75	70
	250	85	75	50	45
95 / 5 Tin-Antimony Solder	100	1090	850	705	660
	150	625	485	405	375
	200	505	395	325	305
	250	270	210	175	165
Alloy E Solder	100	710	555	460	430
	150	475	370	305	285
	200	375	290	240	225
	250	320	250	205	195
Alloy HB Solder	100	1035	805	670	625
	150	710	555	460	430
	200	440	345	285	265
	250	430	335	275	260
Brazing Alloys (melting at or above 1000°F)	Pressure-temperature ratings is that of the tubing being used				

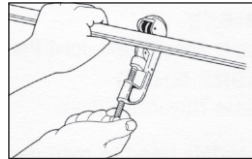
Note: Ratings are those given in ASME B 16.22 "Wrought Copper and Copper Alloy Solder Joint Pressure Fittings." (a) Solder alloys are covered by ASTM Standard Specification B32. The Safe Drinking Water Act Amendment of 1986 prohibits the use of any solder having a lead content in excess of 0.2% for potable water systems.

PRESSURE LOSS IN FITTINGS EXPRESSED AS EQUIVALENT LENGTH OF TUBE, FEET						
Normal or Standard in Inches	Wrot Copper Fittings					
	90 Degree Ell	45 Degree Ell	Tee Straight Run	Tee Side Branch	Coupling	180 Degree Bend
3/8	0.5	0.5	0.5	1	-	0.5
1/2	0.5	0.5	0.5	1	-	1
5/8	0.5	0.5	0.5	2	-	1
3/4	1	0.5	0.5	2	-	2
1	1	1	0.5	3	-	2
1-1/4	2	1	0.5	4	0.5	3
1-1/2	2	2	1	5	0.5	4
2	2	2	1	7	0.5	8
2-1/2	2	3	2	9	0.5	16
3	3	4	-	-	1	20

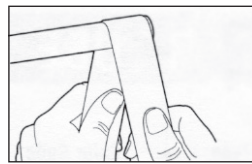
COPPER TUBE AND SOLDER TYPE FITTINGS

1. Cut tube square with the cutter or fine hack saw (32 tooth blade is recommended). Remove Burr.
2. Clean outside end of copper tube thoroughly with sand cloth or sandpaper equal depth of fitting. Leave no dark spots.
3. Clean inside of fitting carefully to tube stop with wire brush. Note: Sand cloth or sandpaper may also be used.
4. Using a brush, apply light uniform coat of soldering flux to the outside of the tube and inside of the fitting.
5. Slip tube into fitting to tube stop. Turn tube back and forth once or twice to distribute flux evenly.
6. Apply heat uniformly around the fitting with torch. When solder melts upon contact with heated fitting, the proper soldering temperature has been reached. Remove flame and feed solder slightly off center at the bottom of the joint. Proceed across the bottom of the fitting and up to the top center position. Return to the starting point, and then proceed up the incomplete side to the top, again, overlapping the solder metal. Wipe off surplus solder with a piece of cloth.

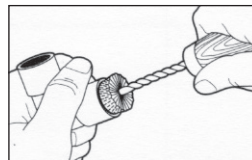
CAUTION: No not overheat the joint or direct the flame into the face of the fitting cup. Overheating could burn the flux, which will destroy its effectiveness and the solder will not enter the joint properly.



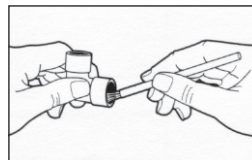
1. Cut tube to length & remove burr with file or scraper.



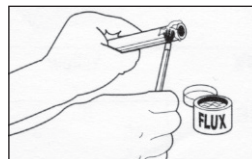
2. Clean outside of tube with sandpaper or sand cloth.



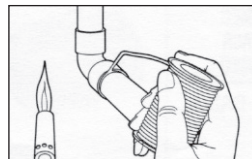
3. Clean inside of fitting with wire brush, sand cloth or sandpaper.



4. Apply flux thoroughly to inside of fitting.



5. Apply flux thoroughly to outside of tube - assemble tube and fitting.



6. Apply heat with torch. When solder melts upon contact with heated fitting, the proper temp for soldering has been reached. Remove flame & feed solder to the joint at one or two points until a ring of solder appears at the end of the fitting.



MUELLER CERTIFICATE

CERTIFICATE OF REGISTRATION



Having been audited in accordance with requirements of

ISO 9001:2015 – ANSI/ISO/ASQ Q9001-2015

SRI Quality System Registrar, 300 Northpointe Circle, Seven Fields, Pennsylvania, 16046, USA,
Steel Related Industries Quality System Registrar, LTD, Alexandra House, Ballsbridge, Dublin 4, Ireland, EU
hereby grants to:

Mueller Copper Tube Company, Inc.

Registration of the management system at its location:

**400 Mueller Road
Fulton, Mississippi, 38843, USA**

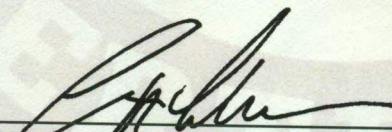
The conditions for maintaining this certificate of registration are set forth in the SRI registration agreements R20.3 and R20.4. Further clarifications regarding the scope of this certificate and the applicability of ISO 9001:2015 requirements may be obtained by consulting the organization.

Scope of ISO 9001:2015 registration: "The casting of copper billets, and extrusion and finishing of copper tube to industry or OEM specifications."

Initial SRI Registration date: February 3, 2016

Current registration period: February 3, 2016 through February 2, 2019

Signed for SRI:


Christopher H. Lake, President & COO

Release Date: June 26, 2018
Certificate Number: 018685
Registration Number: 6156-01





PERRY JOHNSON REGISTRARS, INC.

Certificate of Registration

Perry Johnson Registrars, Inc., has audited the Quality Management System of:

Mueller Fittings Company, Inc.
3400 Mueller Brass Road, Covington, TN 38019 United States

*(Hereinafter called the Organization) and hereby declares that
Organization is in conformance with:*

ISO 9001:2015

This Registration is in respect to the following scope:

The Manufacture of Wrot Pressure Fittings and DWV Fittings

*This Registration is granted subject to the system rules governing the Registration referred to above, and the
Organization hereby covenants with the Assessment body duty to observe and comply with the said rules.*

Terry Boboige, President

Perry Johnson Registrars, Inc. (PJR)
755 West Big Beaver Road, Suite 1340
Troy, Michigan 48084
(248) 358-3388



The use of the UKAS accreditation symbol is in respect to the activities covered by the Accreditation Certificate Number 0105.

The validity of this certificate is dependent upon ongoing surveillance.

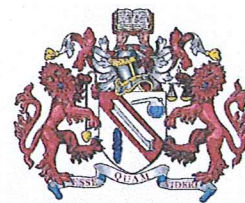
Effective Date:
October 28, 2018

Expiration Date:
October 27, 2021

Certificate No.:
C2018-04185



Certificate



By Royal Charter

This is to certify that:

Mueller Fittings Company, Inc.
3400 Mueller Brass Road
Covington
Tennessee
38019
USA

Holds Certificate Number:

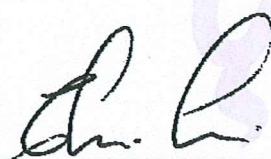
SMA 585693

In respect of:

Manufacture and distribution of seamless copper fittings for use in pressure equipment applications.

This is to declare that BSI has performed a specific materials assessment in connection with the quality system of the above named company and has established that the requirements of Annex I, section 3.1 and 4.3 of the Pressure Equipment Directive 2014/68/EU are met for the above activities (see page).

For and on behalf of BSI:


Chris Lewis - Certification Director, Product Certification

First Issued: 2012-06-13

Latest Issue: 2018-06-26

Expiry Date: 2021-06-25

Page: 1 of 2

...making excellence a habit.™

This certificate has been issued by and remains the property of BSI Assurance UK Ltd, Kitemark Court, Davy Avenue, Knowlhill, Milton Keynes MK5 8PP, United Kingdom and should be returned immediately upon request.
To check its validity telephone +44 (0) 345 080 9000. An electronic certificate can be authenticated [online](#).

BSI Assurance UK Limited, registered in England under number 7805321 at 389 Chiswick High Road, London W4 4AL, UK.
A member of BSI Group of Companies.

Certificate

No. SMA 585693

Additional Information

Product Range					
Item	Material Specification	Grades	Product	Product Std.	Size Range
01	ASTM B75	Alloy C12200	Seamless Fittings	ASME B16.22 MSS SP104	Diameter: 3.17mm to 152.4mm Thickness: 0.48mm to 3.15mm
02	ASTM B88	Alloy C12200	Seamless Fittings	ASME B16.22 MSS SP104	Diameter: 3.17mm to 152.4mm Thickness: 0.48mm to 3.15mm
03	ASTM B280	Alloy C12200	Seamless Fittings	ASME B16.22 MSS SP104	Diameter: 3.17mm to 152.4mm Thickness: 0.48mm to 3.15mm
04	ASTM B306	Alloy C12200	Seamless Fittings	ASME B16.22 MSS SP104	Diameter: 3.17mm to 152.4mm Thickness: 0.48mm to 3.15mm
05	ASTM B819	Alloy C12200	Seamless Fittings	ASME B16.22 MSS SP104	Diameter: 3.17mm to 152.4mm Thickness: 0.48mm to 3.15mm

Exclusions	
1	ESR 3.1.2 – Permanent Joining – the above listed products do not contain any joints
2	ESR 3.1.3 – Non-Destructive Testing – no joints

Note: This certificate is only valid if a current ISO 9001 certificate is in force whose scope covers the manufacture of materials.

First Issued: 2012-06-13

Latest Issue: 2018-06-26

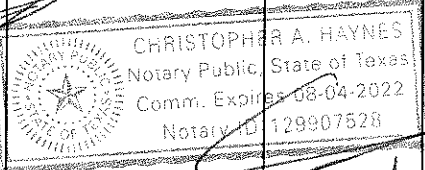
Expiry Date: 2021-06-25

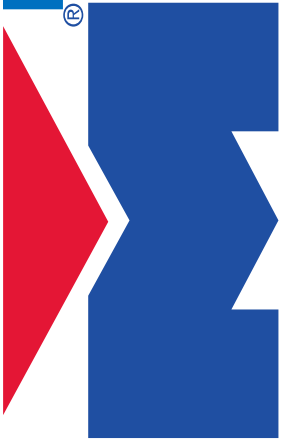
Page: 2 of 2

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BSI Assurance UK Limited, registered in England under number 7805321 at 389 Chiswick High Road, London W4 4AL, UK.
A member of BSI Group of Companies.

CERTIFICATE OF ORIGIN

EXPORTER ONYX INTERNATIONAL INC. 10219 DUSTY HOLLOW LN HOUSTON TX 77089		BOOKING NUMBER 967024206		FORWARDING AGENT'S REF SBNASWE142117		PAGE NO. 1 of 1	
		BILL OF LADING BNASWE142117		CUSTOMER REFERENCE PO#OTS167/2018			
		EXPORT CLEARANCE NO. X20181127612404		ORDER NUMBER(S) 1232721, OTS167/2018			
		BUYER (IF NOT CONSIGNEE)		ON BOARD DATE: 30-Nov-18			
CONSIGNEE / BUYER M/S BEST TRADING & CONTRACTING CO. PO BOX 202278 DOHA QATAR							
NOTIFY PARTY SAME AS CONSIGNEE TEL: 974 4480 7345 FAX: 974 4481 4735		FORWARDING AGENT V ALEXANDER & CO INC FMC NO. 2410 / CHB NO. 3416 22 CENTURY BLVD STE 510 NASHVILLE TN 37214 UNITED STATES					
POINT OF ORIGIN FULTON		DATE 09-Nov-18		TERMS / METHOD OF PAYMENT			
FINAL DESTINATION DOHA		DATE 07-Jan-19		PACKAGES 31 Skid(s)		TOTAL WEIGHT 14331.25 KG	
				TOTAL VOLUME 26.563 M3			
VESSEL / VOYAGE MAERSK DENVER 1811		PORT OF LOADING SAVANNAH, GA.			PORT OF DISCHARGE Doha		
MARKS & NUMBERS		DESCRIPTION OF GOODS (GENERAL) COPPER TUBING - HS#7411.10.1000					
CERTIFICATE OF ORIGIN NOTES							
MANUFACTURER: MUELLER INDUSTRIES 400 MUELLER ROAD FULTON MISSISSIPPI 38843 U.S.A.							
MARKS AND NUMBERS MRKU0655716 11996040		NO. OF PKGS. 1 X 40HC		DESCRIPTION OF COMMODITIES CONTAINER CONTAINING 31 SKIDS		GROSS WEIGHT 14331.251 KG	
						MEASUREMENT 26.563 M3	
		The Humble Area Chamber of Commerce recognized under the laws of the State of Texas certifies in reliance representation of the exporter and not on the basis of independent verification that to the best of its knowledge and belief the above information is true and correct.					
		1202 <i>Veronica Quintero</i>					
The undersigned <u>CHARLENE RYAN</u> (Owner or Agent), does hereby declare for the above named shipper, the goods as described above were shipped on the above date and consigned as indicated and are products of the United States of America.							
Dated at _____ on the _____ day of _____							
Sworn to before me this _____ day of _____							
SIGNATURE OF OWNER OR AGENT <i>Charlene Ryan</i>							
The _____, a recognized Chamber of Commerce under the laws of the State of _____ has examined the manufacturer's invoice or shipper's affidavit concerning the origin of the merchandise, and, according to the best of its knowledge and belief, finds that the products named originated in the United States of America.							
SECRETARY _____							



INTERNATIONAL DIVISION

Mueller Industries, Inc.
8285 Tournament Drive, Suite 150
Memphis, TN 38125
P 901.753.3200

MUELLER COPPER TUBE CO.
FULTON, MS 38843

CERTIFIED REPORT OF CHEMICAL ANALYSIS AND PHYSICAL PROPERTIES

CUSTOMER:

Onyx International Inc
10219 Dusty Hollow Lane
Houston, TX 77089
USA

DATE: 1/6/2020
CARRIER: CUST
TRAILER #: SLSU807068-5
DATE SHIPPED: 1/06.20
CUSTOMER ORDER NO.: 458-19B

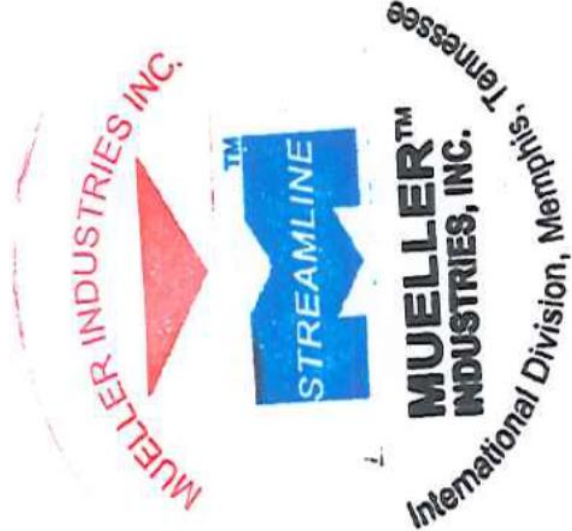
P.O. #	Part No.	Part Description	Spec No. (ASTM)	QTY (Ft)	Alloy	MECHANICAL PROPERTIES					CHEMICAL ANALYSIS		
						PER	HEAT NO.	YIELD STRGH	TENSILE STRGH	ELONG %	HARD-NESS	CHEMICAL ANALYSIS (%)	
												Cu	P
458-19B	AC02020	.325 X .030 X 20'	B280	20,000	TYPE D.H.P. Copper; C.D.A. Type C 12200	H58	N/A	>30 KSI	>36 KSI	N/A	30 MIN	>99.9	0.015-.04
458-19B	AC03020	0.500 X .035 X 20'	B280	15,000	TYPE D.H.P. Copper; C.D.A. Type C 12200	H58	N/A	>30 KSI	>36 KSI	N/A	30 MIN	>99.9	0.015-.04
458-19B	AC04020	0.625 X .040 X 20'	B280	5,000	TYPE D.H.P. Copper; C.D.A. Type C 12200	H58	N/A	>30 KSI	>36 KSI	N/A	30 MIN	>99.9	0.015-.04
458-19B	AC05020	0.75 X .042 X 20'	B280	12,000	TYPE D.H.P. Copper; C.D.A. Type C 12200	H58	N/A	>30 KSI	>36 KSI	N/A	30 MIN	>99.9	0.015-.04
458-19B	AC06020	0.875 X .045 X 20'	B280	7,000	TYPE D.H.P. Copper; C.D.A. Type C 12200	H58	N/A	>30 KSI	>36 KSI	N/A	30 MIN	>99.9	0.015-.04
458-19B	AC10020	1.125 X .050 X 20'	B280	15,000	TYPE D.H.P. Copper; C.D.A. Type C 12200	H58	N/A	>30 KSI	>36 KSI	N/A	30 MIN	>99.9	0.015-.04
458-19B	AC12020	1.375 X .055 X 20'	B280	12,000	TYPE D.H.P. Copper; C.D.A. Type C 12200	H58	N/A	>30 KSI	>36 KSI	N/A	30 MIN	>99.9	0.015-.04
458-19B	AC14020	1.625 X .060 X 20'	B280	8,000	TYPE D.H.P. Copper; C.D.A. Type C 12200	H58	N/A	>30 KSI	>36 KSI	N/A	30 MIN	>99.9	0.015-.04
458-19B	AC20020	2.125 X .070 X 20'	B280	10,000	TYPE D.H.P. Copper; C.D.A. Type C 12200	H58	N/A	>30 KSI	>36 KSI	N/A	30 MIN	>99.9	0.015-.04
458-19B	AC24020	2.625 X .080 X 20'	B280	3,000	TYPE D.H.P. Copper; C.D.A. Type C 12200	H58	N/A	>30 KSI	>36 KSI	N/A	30 MIN	>99.9	0.015-.04
458-19B	AC30020	3.125 X 0.090 X 20'	B280	2,200	TYPE D.H.P. Copper; C.D.A. Type C 12200	H58	N/A	>30 KSI	>36 KSI	N/A	30 MIN	>99.9	.015-.04

MATERIALS IS OF U.S.A. ORIGIN

MUELLER INDUSTRIES, INC. BY:

[Signature]

These commodities, technology or software were exported from the United States of America in accordance with the Export Administrations Regulations. Diversion contrary to US laws is prohibited.





**ONYX
INTERNATIONAL
INC.**

Date: 22/11/2018
Packing List# 00302-2018
Harmonized Code# 8536490065
PAGES 1

Packing List # 00302-2018

Bill & Ship To: M/s. BEST TRADING & CONTRACTING CO.
PO Box 202278 Doha Qatar
Tel: +974 4480 7345
Fax: +974 4481 4735

Cust P.O. #: IGT-PO-126-18	P.O. Date: 16/10/2018	Shipment VIA: Sea freight
Origin: USA	Price Terms: CFR Doha	Payment terms: 100% on Shipping

Refrigeration Tube ASTM B280 & ANSI 9.0 in 60' Coils

Qty in coils	Part #	OD SIZE	Qty/Ctn	lbs/Coil	Total Lbs
650	D 04050	1/4"	10	4.020	2,613
650	D 06050	3/8"	10	6.700	4,355
650	D 08050	1/2"	5	9.100	5,915
650	D 10050	5/8"	5	12.550	8,158
651	D 12050	3/4"	3	15.250	9,928
Total Weight Lbs					30,969.00

Gross Weight LB / kg 31,595 LB / 14,331 KG

MANUFACTURER:
MUELLER INDUSTRIES
400 MUELLER ROAD
FULTON, MISSISSIPPI 38843
U.S.A.

THANK YOU FOR YOUR BUSINESS

ONYX INTERNATIONAL INC.





GENERAL CATALOGUE

Streamline[®]

Tube • Fittings • Valves

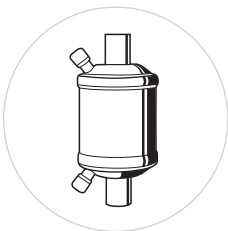
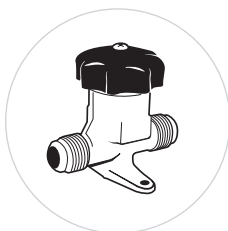
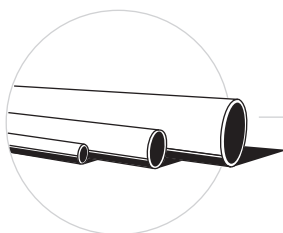
THE INDUSTRY'S FINEST PRODUCTS.
80 YEARS & COUNTING.



HVACR
WHOLESALE CATALOG

A BRAND OF MUELLER INDUSTRIES





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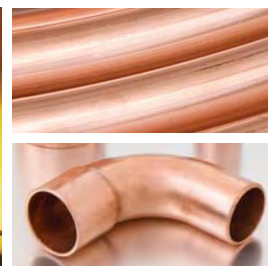
101

► **80 YEARS**
OF THE INDUSTRY'S
FINEST PRODUCTS.

AND COUNTING.



- **Mueller Industries' Streamline® brand of tube, fittings, valves and related products have set the HVAC & Refrigeration Industry's standard of excellence for over 80 years. Known for quality, precision fit and reliable performance, we're proud to be the preferred and specified brand of professionals all around the world.**





Streamline® Past and Future.

When Mueller Industries introduced the world's first solder-type copper fittings under the Streamline brand in 1930, the HVACR industry changed forever.

Those then-revolutionary Streamline copper solder-joined fittings were strong, precise and reliable, which helped establish all-copper systems as the industry standard.

Today, Streamline stands for 80 years of excellence in HVAC & Refrigeration flow-control products.

Manufactured in the U.S.A. in our many modern, state-of-the-art facilities, Streamline copper tube,

fittings and line sets; plastic pipe and fittings; brass flare fittings;

refrigeration valves and protection devices are known and respected all

over the world for consistency, precision fit and unfailing performance.

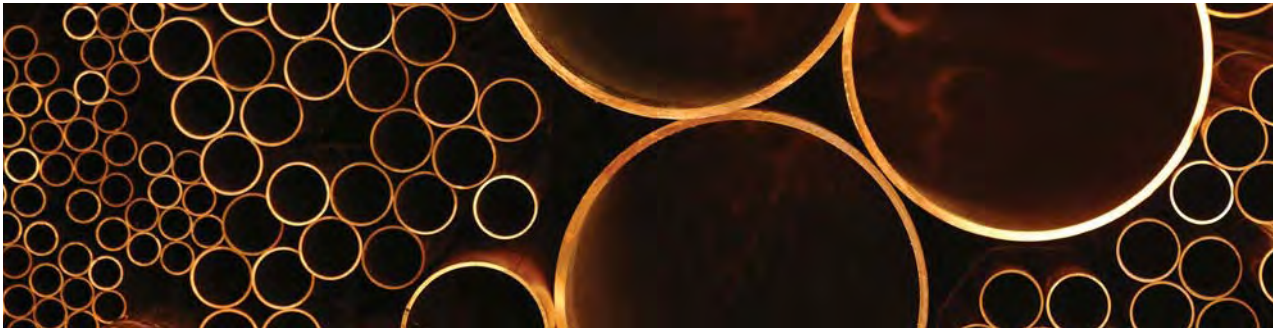


Streamline®

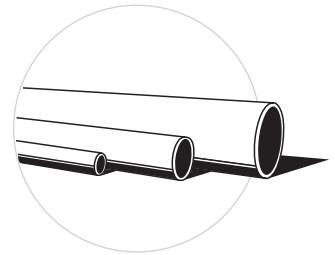
PREMIUM QUALITY TUBE & PIPE MANUFACTURED TO
THE ABSOLUTE HIGHEST STANDARDS.



TUBE & PIPE



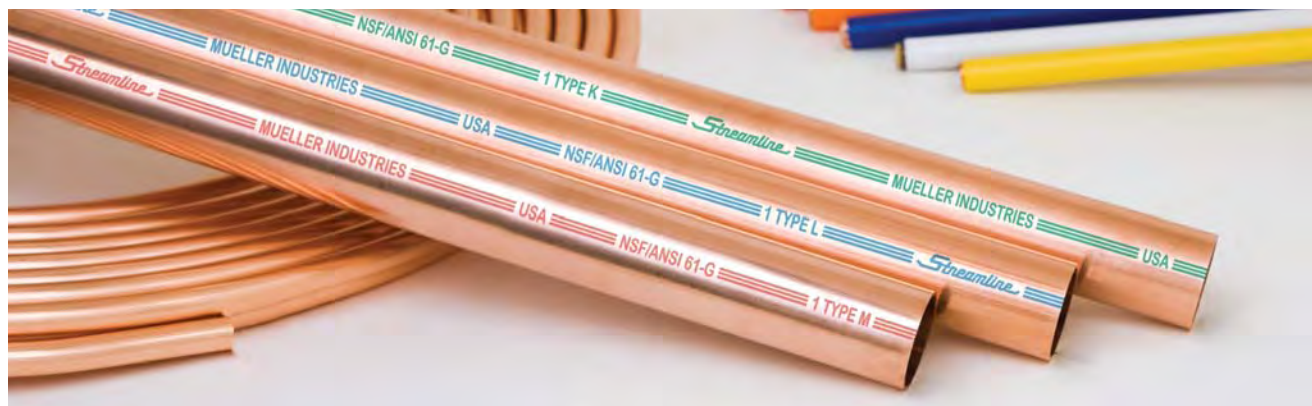
▶ A global leader in premium-quality tube and pipe products since the early 1900's, Streamline® copper tube, line sets and ABS DWV pipe are manufactured in the USA to the absolute highest quality standards. From our pioneering of nitrogen charged ACR copper tube to the precision manufacturing of our ABS DWV pipe, our products reflect many industry first innovations and leading technologies. Each tube and pipe product line offers a full selection of choices to meet the needs of our customers' plumbing, air-conditioning, refrigeration, medical gas and other specialty applications.



- Copper Tube
- Plastic Coated Copper Tube
- Level Wound Copper Tube
- Line Sets
- ABS DWV Pipe

Streamline®

COPPER TUBE • PLUMBING



Streamline® Copper Tube sets the standard for quality, consistency and service in the plumbing industries. With a full line of copper tube products to support most all plumbing supply and DWV applications, Streamline® Copper Tube is available in all common types including Type K, Type L, Type M and DWV. Each piece of tube is incised marked and color coded for easy, long lasting identity. Manufactured in accordance with applicable standards, our ongoing commitment to quality continues to make Streamline® Copper Tube the preferred and specified brand of industry professionals.



- Made to applicable ASTM standards B88, B306, B819
- Meets NSF 61G
- Made in the USA

Copper Tube • Plumbing

Nom. Dia.	O.D. Dia.	TYPE K			TYPE L			TYPE M	DWV	MEDICAL GAS	
		Hard Lengths	Soft Coils	Soft Lengths	Hard Lengths	Soft Coils	Soft Lengths	Hard Lengths	Hard Lengths	Nitrogenized thr 3-1/8" only	
										Type K Hard Lengths	Type L Hard Lengths
1/4"	3/8"	10 ft, 20 ft	60 ft, 100 ft	10 ft, 20 ft	10 ft, 20 ft	60 ft, 100 ft	10 ft, 20 ft	-	-	10 ft, 20 ft	10 ft, 20 ft
3/8"	1/2"	10 ft, 20 ft	60 ft, 100 ft	10 ft, 20 ft	10 ft, 20 ft	60 ft, 100 ft	10 ft, 20 ft	10 ft, 20 ft	-	10 ft, 20 ft	10 ft, 20 ft
1/2"	5/8"	10 ft, 20 ft	60 ft, 100 ft	10 ft, 20 ft	10 ft, 20 ft	60 ft, 100 ft	10 ft, 20 ft	10 ft, 20 ft	-	10 ft, 20 ft	10 ft, 20 ft
5/8"	3/4"	10 ft, 20 ft	60 ft, 100 ft	10 ft, 20 ft	10 ft, 20 ft	60 ft, 100 ft	10 ft, 20 ft	10 ft, 20 ft	-	10 ft, 20 ft	10 ft, 20 ft
3/4"	7/8"	10 ft, 20 ft	60 ft, 100 ft	10 ft, 20 ft	10 ft, 20 ft	60 ft, 100 ft	10 ft, 20 ft	10 ft, 20 ft	-	10 ft, 20 ft	10 ft, 20 ft
1"	1-1/8"	10 ft, 20 ft	60 ft, 100 ft	10 ft, 20 ft	10 ft, 20 ft	60 ft, 100 ft	10 ft, 20 ft	10 ft, 20 ft	-	10 ft, 20 ft	10 ft, 20 ft
1-1/4"	1-3/8"	10 ft, 20 ft	60 ft, 100 ft	10 ft, 20 ft	10 ft, 20 ft	60 ft, 100 ft	10 ft, 20 ft	10 ft, 20 ft	10 ft, 20 ft	10 ft, 20 ft	10 ft, 20 ft
1-1/2"	1-5/8"	10 ft, 20 ft	60 ft, 100 ft	10 ft, 20 ft	10 ft, 20 ft	60 ft, 100 ft	10 ft, 20 ft	10 ft, 20 ft	10 ft, 20 ft	10 ft, 20 ft	10 ft, 20 ft
2"	2-1/8"	10 ft, 20 ft	40 ft, 60 ft	10 ft, 20 ft	10 ft, 20 ft	40 ft, 60 ft	10 ft, 20 ft	10 ft, 20 ft	10 ft, 20 ft	10 ft, 20 ft	10 ft, 20 ft
2-1/2"	2-5/8"	10 ft, 20 ft	-	10 ft, 20 ft	10 ft, 20 ft	-	10 ft, 20 ft	10 ft, 20 ft	-	10 ft, 20 ft	10 ft, 20 ft
3"	3-1/8"	10 ft, 20 ft	-	10 ft, 20 ft	10 ft, 20 ft	-	10 ft, 20 ft	10 ft, 20 ft	10 ft, 20 ft	10 ft, 20 ft	10 ft, 20 ft
3-1/2"	3-5/8"	10 ft, 20 ft	-	-	10 ft, 20 ft	-	-	10 ft, 20 ft	-	10 ft, 20 ft	10 ft, 20 ft
4"	4-1/8"	10 ft, 20 ft	-	-	10 ft, 20 ft	-	-	10 ft, 20 ft	10 ft, 20 ft	10 ft, 20 ft	10 ft, 20 ft
5"	5-1/8"	10 ft, 20 ft	-	-	10 ft, 20 ft	-	-	10 ft, 20 ft	10 ft, 20 ft	10 ft, 20 ft	10 ft, 20 ft
6"	6-1/8"	10 ft, 20 ft	-	-	10 ft, 20 ft	-	-	10 ft, 20 ft	-	10 ft, 20 ft	10 ft, 20 ft
8"	8-1/8"	10 ft, 20 ft	-	-	10 ft, 20 ft	-	-	10 ft, 20 ft	-	10 ft, 20 ft	10 ft, 20 ft

COPPER TUBE • HVACR



Streamline® Copper Tube provides the strength, precision and cleanliness needed for the demanding conditions of HVAC and refrigeration applications. Preferred throughout the industry, our products have set the benchmark for HVACR copper tube. Streamline® Nitrogenized® ACR Copper Tube is pressurized with nitrogen to provide maximum protection against the formation of harmful oxides normally formed during brazing operations. Reduction of these oxides greatly reduces system contamination. Streamline® Refrigeration Service Tube is of a consistent dead soft temper, bright, thoroughly dried/dehydrated and packed in shrink wrapping plus individual cartons for the highest level of protection.



- UL Recognized to 700 PSI (select diameters)
- Made to applicable ASTM standard B280
- Made in the USA

Copper Tube • Refrigeration

ACR TUBE Nitrogenized® thru 3-1/8" only		
O.D. Dia.	Hard Lengths	
	Standard ACR Type L	Heavy Wall ACR Type K
3/8"	10 ft, 20 ft †	10 ft, 20 ft †
1/2"	10 ft, 20 ft †	10 ft, 20 ft †
5/8"	10 ft, 20 ft †	10 ft, 20 ft †
3/4"	10 ft, 20 ft †	10 ft, 20 ft †
7/8"	10 ft, 20 ft †	10 ft, 20 ft †
1-1/8"	10 ft, 20 ft †	10 ft, 20 ft †
1-3/8"	10 ft, 20 ft †	10 ft, 20 ft †
1-5/8"	10 ft, 20 ft	10 ft, 20 ft †
2-1/8"	10 ft, 20 ft	10 ft, 20 ft †
2-5/8"	10 ft, 20 ft	10 ft, 20 ft †
3-1/8"	10 ft, 20 ft	10 ft, 20 ft
3-5/8"	10 ft, 20 ft	10 ft, 20 ft
4-1/8"	10 ft, 20 ft	10 ft, 20 ft
5-1/8"	10 ft, 20 ft	10 ft, 20 ft
6-1/8"	10 ft, 20 ft	10 ft, 20 ft
8-1/8"	10 ft, 20 ft	10 ft, 20 ft

REFRIGERATION SERVICE TUBE	
O.D. Dia.	Soft Coils
1/8"	50 ft, 100 ft †
3/16"	50 ft, 100 ft †
1/4"	50 ft, 100 ft †
5/16"	50 ft, 100 ft †
3/8"	50 ft, 100 ft †
1/2"	50 ft, 100 ft †
5/8"	50 ft, 100 ft †
3/4"	50 ft, 100 ft †
7/8"	50 ft, 100 ft †
1-1/8"	50 ft, 100 ft †
1-3/8"	50 ft, 100 ft
1-5/8"	50 ft, 100 ft

TEMPERATURE CONTROL TUBE				
O.D. Dia. 1/4"	Wall Thickness .025"		Wall Thickness .032"	
	Hard Lengths	Soft Lengths	Hard Lengths	Soft Lengths
	10 ft, 20 ft	10 ft, 20 ft	10 ft, 20 ft	10 ft, 20 ft

Temperature Control Tube is not recommended for forming or bending purposes.

Temperature Control Tube order quantities are in 2000 ft. per box increments.

Standard ACR Copper Tube is produced from Type L Copper Tube. Heavy Wall ACR Copper Tube produced from Type K Copper Tube is available upon request.

COPPER TUBE • PLASTIC COATED



Streamline® Plastic-Coated Copper Tube is manufactured in a variety of options for use when copper tube is to be buried or used in a potentially aggressive environment. Some building and insulation materials may contain chemicals that are potentially corrosive to plain copper tube, requiring it to be protected to ensure its longevity in service. Our plastic-coated copper tube eliminates the need for on-site tape wrapping or sleeving, creating a savings on labor and ensuring a professional-looking installation. It can be used in a wide variety of situations including reclaimed water applications and the movement of natural gas.



* Type K & L water tube only.

- UL Recognized to 700 PSI (select diameters)
- For use in above-ground potable water supply systems
- Constructed of high-grade copper
- Made to applicable ASTM standards B88, B280
- Meets NSF 61G

Polyethylene-Coated Copper Tube: PlumbShield®, GasShield®, OilShield®, Coated ACR

Nom. Dia.	O.D. Dia.	TYPE K		TYPE L		COATED ACR		REFRIGERATION
		Lengths	Soft Coils	Lengths	Soft Coils	Type K	Type L	Soft Coils
1/4"	3/8"	-	60 ft, 100 ft	-	60 ft, 100 ft	-	-	50 ft, 100 ft, 250 ft †
3/8"	1/2"	-	60 ft, 100 ft	-	60 ft, 100 ft	-	-	50 ft, 100 ft, 250 ft †
1/2"	5/8"	20 ft	60 ft, 100 ft	20 ft	60 ft, 100 ft	20 ft †	20 ft †	50 ft, 100 ft, 250 ft †
5/8"	3/4"	20 ft	60 ft, 100 ft	20 ft	60 ft, 100 ft	20 ft †	20 ft †	50 ft, 100 ft †
3/4"	7/8"	20 ft	60 ft, 100 ft	20 ft	60 ft, 100 ft	20 ft †	20 ft †	50 ft, 100 ft †
1"	1-1/8"	20 ft	60 ft, 100 ft	20 ft	60 ft, 100 ft	20 ft †	20 ft †	50 ft, 100 ft †
1-1/4"	1-3/8"	20 ft	60 ft, 100 ft	20 ft	60 ft, 100 ft	20 ft †	20 ft †	-
1-1/2"	1-5/8"	20 ft	-	20 ft	-	20 ft †	20 ft	-
2"	2-1/8"	20 ft	-	20 ft	-	20 ft †	20 ft	-

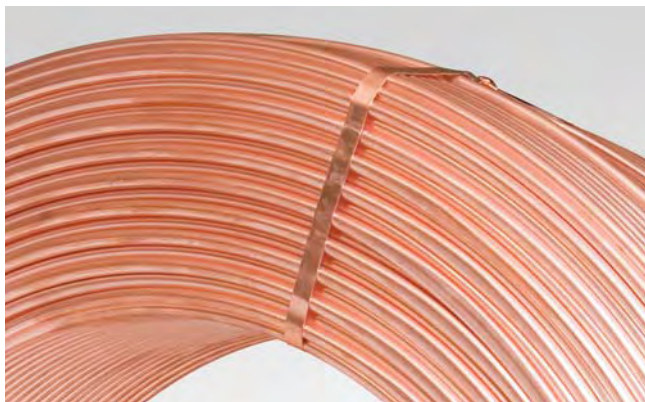
PlumbShield® is available in blue and red for water applications and purple for reclaimed water. Certified to NSF 61.

GasShield® is available in yellow for natural and LP Gas applications. *O.D. sizes only. Manufactured to meet the requirements of NFPA 54.

OilShield® is available in orange for fuel and oil applications. *O.D. sizes only. Manufactured to meet the requirements of NFPA 31.

Coated ACR is available in white for HVAC & Refrigeration applications. Hard drawn tube lengths are nitrogen charged and plugged.

COPPER TUBE • LEVEL WOUND



Streamline® Level Wound Copper Tube is a great solution for when large quantity coiled tubing is a benefit. Available in light annealed, soft annealed and hard temper, this tube comes in either bulk coil or spool rolled coil packaging. Bulk coils come independently stacked with cardboard disk separators and stretch wrapped onto a skid. Spool coil coils come stacked with hub mounted cardboard reels and also stretch wrapped onto a skid. Streamline® Level Wound Copper Tube is manufactured in various wall dimensions and diameters. Custom options and tempers can be quoted upon request.



- Seamless tube alloy made to C12200 DHP
- Copper material made to ASTM standard B743
- Custom O.D. wall and or tempers can be quoted as required
- Bulk packaging and spool packaging available

Copper Tube • Level Wound

O.D. Dia.	Wall	Sizes (lbs.)	Coil Width	Coils per Skid	Approx. Feet / Coil
1/4"	.028"	180	7"	6	2377
1/4"	.030"	180	7"	6	2239
5/16"	.032"	180	7"	6	1643
3/8"	.028"	180	7"	6	1521
3/8"	.030"	180	7"	6	1428
3/8"	.035"	180	7"	6	1242
1/2"	.028"	180	7"	6	1118
1/2"	.032"	180	7"	6	987
1/2"	.035"	180	7"	6	908
5/8"	.032"	180	9"	5	779
5/8"	.035"	180	9"	5	716
5/8"	.040"	180	9"	5	632
3/4"	.035"	180	9"	5	591
7/8"	.038"	180	9"	5	465
7/8"	.045"	180	9"	5	396
1-1/8"	.050"	180	9"	5	275

* Level Wound Copper Tube is available in Light Annealed, Soft Annealed and Hard Temper.

Bulk Packaging Information

Skids (43" X 43") | Coil ID = 26"
Stacked in with cardboard disk as separators
Plastic stretch wrapped on to a skid
Coils per skid are dependent on coil width

Spool Packaging Information

Skids (43" X 43")
Spools Diameter 42" O.D. | Hub Hole 5.25" I.D.
Stacked with cardboard reels and hubs mounted
Plastic stretch wrapped on to a skid
Coils per skid are dependent on coil width

Temper

050 = Light Annealed
060 = Soft Annealed
H58 = Hard

LINE SETS



Streamline® Line Sets have been an industry leader for decades. We leverage our many years of experience and expertise producing copper tube in every line set we make. From liquid line and suction line handling to unique insulation applications and packaging, every Streamline® Line Set meets our rigorous standards for quality and consistency. With a broad offering of liquid line and suction line diameters, insulation, thicknesses, custom ends and connections – plus a wide array of custom options, we're able to meet our customers most specialized and exacting needs.

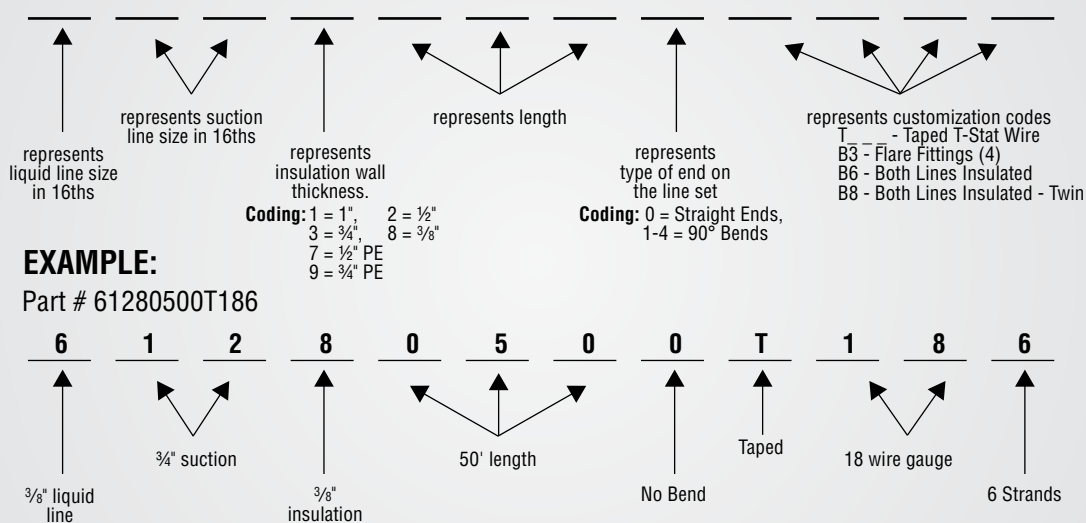


- Copper Tube UL Recognized to 700 PSI
- R410A engineered & tested
- Proprietary manufacturing process allows for kink-free installation

Custom Options Include:

- Insulated liquid and suction lines for mini-split and twin tube systems
- Flare nuts, 90-degree bends, custom connections and assemblies
- Nitrogen and refrigerant charged lines
- Custom lengths
- Thermostat wire, mini-split wire or control cable, and taping

Line Sets Part Number Coding



LINE SETS

				STANDARD LINE SETS										
				Quantity per Master Carton										
Series No.	Liquid Line	Suction Line	Insulation	10'	15'	20'	25'	30'	35'	40'	45'	50'	60'	100'
406	1/4"	3/8"	3/8"	14	14	14	14	14	12	12	8	8	7	1
			1/2"	14	14	14	14	14	12	12	8	8	7	1
			3/4"	8	8	8	8	5	7	5	4	4	4	1
			1"	8	8	8	8	4	5	5	4	4	4	1
408	1/4"	1/2"	3/8"	14	14	14	14	14	12	12	8	7	7	1
			1/2"	14	14	14	14	12	8	8	8	7	5	1
			3/4"	14	14	8	8	7	7	5	4	4	4	1
			1"	12	8	8	8	5	5	5	4	4	4	1
410	1/4"	5/8"	3/8"	14	14	14	14	12	8	8	8	8	7	1
			1/2"	14	14	12	12	8	8	8	7	7	5	1
			3/4"	12	12	12	8	7	7	7	7	5	5	1
			1"	12	8	8	8	5	5	5	4	4	4	1
412	1/4"	3/4"	3/8"	14	14	14	12	12	8	8	7	7	5	1
			1/2"	14	14	12	8	8	7	7	5	5	4	1
			3/4"	12	12	8	8	5	5	5	4	4	4	1
			1"	12	8	8	8	5	5	5	4	4	4	1
510	5/16"	5/8"	3/8"	14	14	14	14	12	8	8	8	8	7	1
			1/2"	14	14	12	12	8	8	8	7	7	5	1
			3/4"	12	12	12	8	8	8	8	7	5	5	1
			1"	12	12	8	5	8	8	8	7	4	5	1
512	5/16"	3/4"	3/8"	14	14	14	12	12	8	8	7	7	5	1
			1/2"	14	14	12	8	8	7	7	5	5	4	1
			3/4"	12	8	8	8	5	5	5	4	4	4	1
			1"	12	8	8	5	5	5	5	4	4	4	1
514	5/16"	7/8"	3/8"	14	14	12	12	8	8	8	7	7	5	1
			1/2"	14	12	8	8	7	7	5	5	5	4	1
			3/4"	12	8	8	8	5	5	4	4	4	4	1
			1"	12	8	8	7	5	5	4	4	4	4	1
518	5/16"	1-1/8"	3/8"	8	8	8	8	7	7	5	5	5	5	1
			1/2"	8	8	8	8	7	5	5	4	4	4	1
			3/4"	8	7	7	7	5	4	4	4	4	4	1
			1"	8	7	7	7	5	4	4	4	4	4	1
610	3/8"	5/8"	3/8"	14	14	14	14	12	8	8	8	8	7	1
			1/2"	14	14	12	12	8	8	8	7	7	5	1
			3/4"	12	12	12	7	7	5	5	5	5	5	1
			1"	8	12	8	5	5	4	4	4	4	4	1
612	3/8"	3/4"	3/8"	14	14	14	12	12	8	8	7	7	5	1
			1/2"	14	12	12	8	8	7	7	5	5	4	1
			3/4"	12	8	8	8	5	5	5	4	4	4	1
			1"	12	8	8	5	5	4	4	4	4	4	1
614	3/8"	7/8"	3/8"	14	12	12	12	8	8	8	7	7	5	1
			1/2"	14	8	8	8	7	7	5	5	5	4	1
			3/4"	12	8	8	7	5	5	4	4	4	4	1
			1"	7	7	7	5	5	4	4	4	4	4	1
618	3/8"	1-1/8"	3/8"	8	8	8	8	7	7	5	5	5	5	-
			1/2"	8	8	8	8	7	5	5	4	4	4	-
			3/4"	8	7	7	7	5	4	4	4	4	4	-
			1"	8	7	7	7	5	4	4	4	4	4	-
810	1/2"	5/8"	3/8"	14	14	14	14	12	8	8	8	8	7	1
			1/2"	14	14	12	12	8	8	8	7	7	5	1
			3/4"	12	12	12	7	7	5	5	5	5	5	1
			1"	12	12	12	7	7	5	5	5	5	5	1
812	1/2"	3/4"	3/8"	14	14	14	12	12	8	8	7	7	5	1
			1/2"	14	14	12	8	8	7	7	5	5	4	1
			3/4"	12	8	8	8	5	5	5	4	4	4	1
			1"	12	8	8	8	5	5	5	4	4	4	1
814	1/2"	7/8"	3/8"	14	14	12	12	8	8	8	7	7	5	1
			1/2"	14	12	8	7	7	7	4	5	5	4	1
			3/4"	12	8	8	7	5	5	4	4	4	4	1
			1"	12	8	8	7	5	5	4	4	4	4	1
818	1/2"	1-1/8"	3/8"	8	8	8	8	8	7	5	5	5	5	-
			1/2"	8	8	8	8	8	5	5	4	4	4	-
			3/4"	8	7	7	7	5	4	4	4	4	4	-
			1"	8	7	7	7	5	4	4	4	4	4	-



Mini-Split Line Sets • Plain Ends

LIQUID LINE & SUCTION LINE INSULATED

Quantity per Master Carton

Series No.	Liquid Line	Suction Line	Insulation	15'	20'	25'	30'	35'	40'	45'	50'	100'
406	1/4"	3/8"	3/8"	14	14	14	14	12	12	8	8	1
			1/2"	14	14	14	14	8	12	8	7	1
			3/4"	14	8	7	7	7	5	4	5	1
408	1/4"	1/2"	3/8"	14	14	14	14	12	12	8	7	1
			1/2"	14	14	14	12	8	8	8	5	1
			3/4"	14	8	7	7	7	5	4	4	1
410	1/4"	5/8"	3/8"	14	14	14	12	8	8	8	8	1
			1/2"	14	14	8	8	8	8	7	7	1
			3/4"	12	12	7	7	7	7	7	5	1
610	3/8"	5/8"	3/8"	14	14	14	12	8	8	8	8	1
			1/2"	14	12	12	8	8	8	7	7	1
			3/4"	12	12	7	7	5	5	5	5	1
612	3/8"	3/4"	3/8"	14	14	12	12	8	8	7	7	1
			1/2"	14	12	8	8	7	7	5	5	1
			3/4"	8	8	8	5	5	5	4	4	1



Mini-Split Line Sets • Flare Fittings

LIQUID LINE & SUCTION LINE INSULATED

Quantity per Master Carton

Series No.	Liquid Line	Suction Line	Insulation	15'	20'	25'	30'	35'	40'	45'	50'	100'
406	1/4"	3/8"	3/8"	14	14	14	14	12	12	8	8	1
			1/2"	12	12	12	8	8	12	8	8	1
			3/4"	14	8	12	7	7	5	4	5	1
408	1/4"	1/2"	3/8"	14	14	14	14	12	12	8	7	1
			1/2"	14	12	14	12	8	8	8	7	1
			3/4"	14	8	8	7	7	5	4	5	1
410	1/4"	5/8"	3/8"	14	14	14	12	8	8	8	8	1
			1/2"	14	12	12	8	8	8	7	7	1
			3/4"	12	12	7	7	7	7	7	5	1
610	3/8"	5/8"	3/8"	14	14	14	12	8	8	8	8	1
			1/2"	14	12	12	8	8	8	7	7	1
			3/4"	12	12	7	7	5	5	5	5	1
612	3/8"	3/4"	3/8"	14	14	12	12	8	7	7	7	1
			1/2"	14	12	8	7	7	7	5	4	1
			3/4"	8	8	8	5	5	5	4	4	1

ABS DWV PIPE



Streamline® ABS DWV Pipe has consistent and dense cellular structure, plus a uniform pipe wall thickness for uncompromising, reliable performance. Smooth, consistent interior walls provide for full flow and increased resistance to corrosion and scaling. Dense and uniform cellular (foam) structure results in a stronger, more reliable and quiet product while uniform interior and exterior wall skins improve joint strength and reliability. Our proprietary manufacturing technologies combined with our relentless attention to quality and detail means our customers will enjoy the best pipe in the industry.



- For use in non-pressurized drain, waste and vent sanitary systems
- Dense and uniform cellular (foam) structure results in a stronger, more reliable and quiet product
- Superior resistance to chemicals and corrosion
- Smooth, consistent interior walls provide for full flow and increased resistance to corrosion and scaling
- Uniform interior and exterior wall skins improve joint strength and reliability
- Made to ASTM standard F628
- Meets NSF 14

ABS DWV Pipe – 10 FT

ABS DWV Schedule 40 Cellular Core, Plain End, Black, ASTM F-628

Nom. Dia.	Lengths	Part Number	Feet Per Lift	Pieces per Lift	Weight (lbs.) per 100 ft.	Truckload % per Lift
1-1/2"	10 ft.	APC015010	2590	259	27.3	2.5
2"	10 ft.	APC020010	1670	167	37.8	2.5
3"	10 ft.	APC030010	750	75	74.5	2.5
4"	10 ft.	APC040010	480	48	103.9	2.5
6"	10 ft.	APC060010	180	18	186.9	2.5

ABS DWV Pipe – 20 FT

ABS DWV Schedule 40 Cellular Core, Plain End, Black, ASTM F-628

Nom. Dia.	Lengths	Part Number	Feet Per Lift	Pieces per Lift	Weight (lbs.) per 100 ft.	Truckload % per Lift
1-1/2"	20 ft.	APC015020	5,180	259	27.3	5
2"	20 ft.	APC020020	3,340	167	37.8	5
3"	20 ft.	APC030020	1,500	75	74.5	5
4"	20 ft.	APC040020	960	48	103.9	5
6"	20 ft.	APC060020	360	18	186.9	5

Streamline[®]

THE BEST FITTINGS IN THE JOINT.™



COPPER FITTINGS



▶ As originators of the solder-type copper fittings, our commitment to providing the highest quality fittings in the industry holds a special place. Today, our expansive line of Streamline® Copper Fittings are one of the industry's most complete offerings of fittings for copper piping systems from one source. Our many years of engineering know-how and experience are reflected in the fine quality and workmanship of each copper fitting we manufacture.



- Copper Fittings

Streamline®

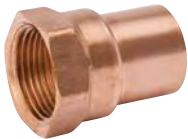
COPPER FITTINGS



Streamline® Copper Solder-Joint Fittings for supply/pressurized systems have been the leading brand of copper fittings for over 80 years. Available in wrought copper, our product selection has grown to become the most extensive in the industry. We are the acknowledged experts at engineering and manufacturing precision solder-joint copper fittings. Quality, consistency and reliability have made the Streamline® brand trusted and specified all around the world.



- UL Recognized to 700 PSI (select diameters)
- Constructed of high-grade copper or bronze materials
- Made to applicable ASME standards B16.15, B16.18, B16.22, B16.24, B16.50, B1.20.1
- Wrot fittings meet NSF 61G



Adapter • Female

C x F
WC-402



Item No.	Diameter	Each Wt.	Inner Qty.	Master Carton
W 01204	1/4" x 1/2"	0.1000	100	300
W 01205	1/4" x 3/8"	0.0500	100	700
W 01206	1/4" x 1/4"	0.0400	100	900
W 01207	1/4" x 1/8"	0.0400	100	1,500
W 01214	3/8" x 3/8"	0.0600	50	750
W 01215	3/8" x 1/4"	0.0400	50	750
W 01216	3/8" x 1/8"	0.0300	100	1,500
W 01223	1/2" x 3/4"	0.1600	50	300
W 01224	1/2" x 1/2"	0.1000	50	500
W 01225	1/2" x 3/8"	0.0700	50	750
W 01226	1/2" x 1/4"	0.0600	50	750
W 01230	5/8" x 3/4"	0.1600	25	250
W 01231	5/8" x 1/2"	0.1000	50	500
W 01232	5/8" x 3/8"	0.0700	50	500
W 01233	5/8" x 1/4"	0.0600	50	500
W 01238	3/4" x 3/4"	0.1500	50	500
W 01239	3/4" x 1/2"	0.0900	50	500
W 01245	7/8" x 1"	0.2700	25	250
W 01246	7/8" x 3/4"	0.1400	25	250
W 01247	7/8" x 1/2"	0.1100	25	250
W 01261	1-1/8" x 1-1/4"	0.2800	10	100

(CONTINUED NEXT COLUMN)

(CONTINUED FROM PREVIOUS COLUMN)

Item No.	Diameter	Each Wt.	Inner Qty.	Master Carton
W 01263	1-1/8" x 1"	0.2500	25	250
W 01264	1-1/8" x 3/4"	0.2200	25	250
W 01265	1-1/8" x 1/2"	0.2500	20	200
W 01270	1-3/8" x 1-1/2"	0.5000	10	100
W 01271	1-3/8" x 1-1/4"	0.4500	10	100
W 01272	1-3/8" x 1"	0.3300	10	100
W 01278	1-5/8" x 2"	0.7400	—	60
W 01279	1-5/8" x 1-1/2"	0.5300	10	100
W 01280	1-5/8" x 1-1/4"	0.3900	5	50
W 01287	2-1/8" x 2"	0.5700	—	50
W 01288	2-1/8" x 1-1/2"	0.7400	5	50
W 01296	2-5/8" x 2-1/2"	1.2200	—	25
W 01297	3-1/8" x 3"	—	—	15



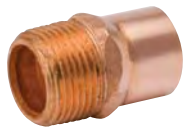
Adapter • Fitting

FTG x F

Wrot Style #: WC-405



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 01514	3/8" x 3/8"	0.0600	50	750
W 01524	1/2" x 1/2"	0.1000	50	350
W 01525	1/2" x 3/8"	0.0500	50	750
W 01526	1/2" x 1/4"	0.0600	50	750
W 01531	5/8" x 1/2"	0.1100	50	450
W 01532	5/8" x 3/8"	0.0700	50	750
W 01546	7/8" x 3/4"	0.1700	25	250
W 01547	7/8" x 1/2"	0.1100	50	500
W 01563	1-1/8" x 1"	0.2400	25	250
W 01564	1-1/8" x 3/4"	0.1800	25	250
W 01571	1-3/8" x 1-1/4"	0.4000	10	100
W 01579	1-5/8" x 1-1/2"	0.4600	10	100
W 01587	2-1/8" x 2"	0.6500	—	50
W 01596	2-5/8" x 2-1/2"	1.2000	—	25



Adapter • Male

C X M

Wrot Style #: WC-401

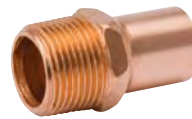


Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 01105	1/4" x 3/8"	0.0600	50	750
W 01106	1/4" x 1/4"	0.0300	50	1,200
W 01107	1/4" x 1/8"	0.0200	50	2,400
W 01109	5/16" x 3/8"	0.0700	50	800
W 01110	5/16" x 1/4"	0.0300	50	1,200
W 01113	3/8" x 1/2"	0.0800	50	500
W 01114	3/8" x 3/8"	0.0600	50	750
W 01115	3/8" x 1/4"	0.0300	50	1,200
W 01116	3/8" x 1/8"	0.0200	50	2,000
W 01123	1/2" x 3/4"	0.1700	25	250
W 01124	1/2" x 1/2"	0.0900	50	500
W 01125	1/2" x 3/8"	0.0600	50	500
W 01126	1/2" x 1/4"	0.0500	50	750
W 01129	5/8" x 1"	0.3000	15	150
W 01130	5/8" x 3/4"	0.1700	25	250
W 01131	5/8" x 1/2"	0.0600	50	500
W 01132	5/8" x 3/8"	0.0700	50	500
W 01133	5/8" x 1/4"	0.0600	25	600
W 01138	3/4" x 3/4"	0.1400	25	250
W 01139	3/4" x 1/2"	0.1200	25	250
W 01145	7/8" x 1"	0.2900	10	100
W 01146	7/8" x 3/4"	0.1300	25	250
W 01147	7/8" x 1/2"	0.1200	25	250
W 01161	1-1/8" x 1-1/2"	0.4800	10	100
W 01162	1-1/8" x 11/4"	0.3900	10	100
W 01163	1-1/8" x 1"	0.2400	10	100
W 01164	1-1/8" x 3/4"	0.1700	10	100
W 01165	1-1/8" x 1/2"	0.1800	10	100
W 01170	1-3/8" x 1-1/2"	0.4800	10	100
W 01171	1-3/8" x 1-1/4"	0.4100	10	100
W 01172	1-3/8" x 1"	0.2400	10	100
W 01173	1-3/8" x 3/4"	0.2100	10	100
W 01178	1-5/8" x 2"	0.7800	—	50

(CONTINUED NEXT COLUMN)

(CONTINUED FROM PREVIOUS COLUMN)

Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 01179	1-5/8" x 1-1/2"	0.5100	10	100
W 01180	1-5/8" x 1-1/4"	0.3700	10	100
W 01181	1-5/8" x 1"	0.3800	10	100
W 01187	2-1/8" x 2"	0.5700	5	50
W 01188	2-1/8" x 1-1/2"	0.6400	—	50
W 01189	2-1/8" x 1-1/4"	0.5700	—	50
W 01196	2-5/8" x 2-1/2"	1.2600	—	20
W 01197	2-5/8" x 2"	0.9800	—	20
W 01198	2-5/8" x 1-1/2"	0.9800	—	22
W 01199	3-1/8" x 3"	1.7000	—	20
W 01150	4-1/8" x 4"	3.7100	—	16



Adapter • Fitting

FTG x M

Wrot Style #: WC-404



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 01425	1/2" x 3/8"	0.0500	50	750
W 01431	5/8" x 1/2"	0.0900	50	500
W 01432	5/8" x 3/8"	0.0600	50	750
W 01446	7/8" x 3/4"	0.1500	50	500
W 01447	7/8" x 1/2"	0.1300	50	500
W 01463	1-1/8" x 1"	0.2300	25	250
W 01464	1-1/8" x 3/4"	0.1900	25	250
W 01471	1-3/8" x 1-1/4"	0.4100	10	100
W 01479	1-5/8" x 1-1/2"	0.4900	10	100
W 01487	21/8" x 2"	0.7600	—	50
W 01496	2-5/8" x 2-1/2"	1.9500	—	20



Bushing • Flush

FTG x C

Wrot Style #: WC-106



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 01706	3/8" x 1/4"	0.0100	100	4,000
W 01712	1/2" x 3/8"	0.0100	100	4,000
W 01714	1/2" x 1/4"	0.0200	100	2,400
W 01715	5/8" x 1/2"	0.0200	100	1,500
W 01717	5/8" x 3/8"	0.0400	100	1,500
W 01720	3/4" x 5/8"	0.0300	50	750
W 01721	3/4" x 1/2"	0.0600	50	750
W 01722	3/4" x 3/8"	0.0800	50	750
W 01725	7/8" x 3/4"	0.0400	50	500
W 01726	7/8" x 5/8"	0.0700	50	500
W 01727	7/8" x 1/2"	0.1100	50	500
W 01737	1-1/8" x 7/8"	0.1200	50	500
W 01738	1-1/8" x 3/4"	0.1800	50	500
W 01739	1-1/8" x 5/8"	0.2200	25	250
W 01743	1-3/8" x 1-1/8"	0.1600	10	200
W 01745	1-3/8" x 7/8"	0.3000	10	200
W 01750	1-5/8" x 1-3/8"	0.2200	10	100
W 01751	1-5/8" x 1-1/8"	0.4100	10	100
W 01758	2-1/8" x 1-5/8"	0.6800	10	100
W 01759	2-1/8" x 1-3/8"	0.9400	5	50
W 01767	2-5/8" x 2-1/8"	0.9200	—	50

All diameters are O.D.

COPPER FITTINGS



Bushing • Flush

FTG x F
Wrot Style #: WC-417
Brass



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
A 07812	5/8" x 1/8"	0.0400	100	1,600
A 07813	5/8" x 1/4"	0.0200	50	1,200
A 07814	7/8" x 3/8"	0.0800	50	450
A 07815	1-1/8" x 1/2"	0.1700	50	300
A 07816	1-3/8" x 3/4"	0.2500	10	160
A 07817	1-5/8" x 1"	0.3400	10	90
A 07819	2-1/8" x 1-1/2"	0.4800	10	90



Cap

C
Wrot Style #: WC-415



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 07002 †	1/4"	0.0000	50	2,000
W 07004 †	3/8"	0.0100	50	2,000
W 07006 †	1/2"	0.0100	50	1,000
W 07007 †	5/8"	0.0200	100	1,000
W 07008 †	3/4"	0.0300	50	2,000
W 07009 †	7/8"	0.0400	50	500
W 07011 †	1-1/8"	0.0800	50	500
W 07012 †	1-3/8"	0.1100	25	250
W 07013 †	1-5/8"	0.1800	25	250
W 07014 †	2-1/8"	0.3000	—	100
W 07015 †	2-5/8"	0.4800	—	50
W 07016	3-1/8"	0.7300	—	50
W 07017	3-5/8"	1.1500	—	25
W 07018	4-1/8"	1.5000	—	20



Coupling • No Stop

C x C
Wrot Style #: WC-400NS



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 01900 †	1/4"	0.0000	100	4,000
W 01901 †	3/8"	0.0100	50	2,000
W 01902 †	1/2"	0.0100	50	1,700
W 01903 †	5/8"	0.0300	100	1,000
W 01904 †	3/4"	0.0400	25	375
W 01905 †	7/8"	0.0600	50	500
W 01906 †	1-1/8"	0.1100	25	250
W 01907 †	1-3/8"	0.1500	25	250
W 01908 †	1-5/8"	0.2500	10	100
W 01909 †	2-1/8"	0.4000	—	75
W 01910 †	2-5/8"	0.6600	—	50
W 01911	3-1/8"	1.0300	—	25
W 01913	4-1/8"	2.1500	—	15



Coupling • Rolled Stop

C x C
Wrot Style #: WC-400



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 01000 †	1/8"	0.0000	100	4,000
W 01001 †	3/16"	0.0000	100	4,000
W 01003 †	1/4"	0.0000	100	4,000
W 01009 †	3/8"	0.0100	50	2,000
W 01017 †	1/2"	0.0100	50	1,700
W 01022 †	5/8"	0.0300	100	1,000
W 01028 †	3/4"	0.0500	50	500
W 01034 †	7/8"	0.0600	50	500
W 01040 †	1"	0.0900	25	250
W 01047 †	1-1/8"	0.1100	25	250
W 01055 †	1-3/8"	0.1500	25	250
W 01062 †	1-1/2"	0.2200	—	150
W 01063 †	1-5/8"	0.2100	10	100
W 01072 †	2-1/8"	0.4000	—	75
W 01082 †	2-5/8"	0.6600	—	50
W 01092	3-1/8"	1.0300	—	25
W 10100	3-5/8"	1.1800	—	20
W 10107	4-1/8"	2.1100	—	15



Coupling • Staked Stop

C x C
Wrot Style #: WC-400S



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 10141 †	1/4"	0.0000	100	3,400
W 10142 †	5/16"	0.0100	100	5,600
W 10143 †	3/8"	0.0100	50	2,000
W 10144 †	1/2"	0.0100	50	1,700
W 10145 †	5/8"	0.0300	100	1,000
W 10157 †	3/4"	0.0400	25	500
W 10146 †	7/8"	0.0600	50	500
W 10147 †	1-1/8"	0.1100	25	250
W 10148 †	1-3/8"	0.1500	25	250
W 10149 †	1-5/8"	0.2200	10	100
W 10150 †	2-1/8"	0.4100	—	75
W 10151 †	2-5/8"	0.6600	—	50
W 10152	3-1/8"	1.0200	—	25
W 10153	3-5/8"	1.0300	—	20
W 10154	4-1/8"	2.1500	—	15
W 10155	5-1/8"	3.3400	—	8
W 10156	6-1/8"	4.6100	—	3
W 10130	8-1/8"	14.1300	—	1



Coupling • Reducing

C x C
Wrot Style #: WC-400R



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 01004 †	1/4" x 3/16"	0.0100	50	2,000
W 01005 †	1/4" x 1/8"	0.0000	50	2,000
W 01010 †	3/8" x 5/16	0.0100	50	1,700
W 01011 †	3/8" x 1/4"	0.0100	50	2,000
W 01019 †	1/2" x 3/8"	0.0100	50	1,700
W 01021 †	1/2" x 1/4"	0.0200	50	1,200
W 01023 †	5/8" x 1/2"	0.0300	100	1,000
W 01025 †	5/8" x 3/8"	0.0300	100	1,000
W 01027 †	5/8" x 1/4"	0.0300	100	1,000
W 01029 †	3/4" x 5/8"	0.0500	100	600
W 01030 †	3/4" x 1/2"	0.0400	100	600
W 01031 †	3/4" x 3/8"	0.0400	100	600
W 01035 †	7/8" x 3/4"	0.0600	100	1,000
W 01036 †	7/8" x 5/8"	0.0800	50	500
W 01037 †	7/8" x 1/2"	0.0600	50	500
W 01038 †	7/8" x 3/8"	0.0600	50	500
W 01049 †	1-1/8" x 7/8"	0.1300	25	250
W 01050 †	1-1/8" x 3/4"	0.1100	25	250
W 01051 †	1-1/8" x 5/8"	0.1100	25	250
W 01052 †	1-1/8" x 1/2"	0.1100	25	250
W 01056 †	1-3/8" x 1-1/8"	0.2000	10	100
W 01058 †	1-3/8" x 7/8"	0.1700	10	100
W 01060 †	1-3/8" x 5/8"	0.1700	10	100
W 01064 †	1-5/8" x 1-3/8"	0.2300	10	100
W 01065 †	1-5/8" x 1-1/8"	0.2300	10	100
W 01067 †	1-5/8" x 7/8"	0.2400	10	100
W 01069 †	1-5/8" x 5/8"	0.2200	10	100
W 01073 †	2-1/8" x 1-5/8"	0.4300	—	100
W 01074 †	2-1/8" x 1-3/8"	0.4300	—	100
W 01075 †	2-1/8" x 1-1/8"	0.4600	—	100
W 01077 †	2-1/8" x 7/8"	0.4000	—	100
W 01079 †	2-1/8" x 5/8"	0.4100	—	75
W 01083 †	2-5/8" x 2-1/8"	0.6500	—	50
W 01084 †	2-5/8" x 1-5/8"	0.7500	—	50
W 01085 †	2-5/8" x 1-3/8"	0.7000	—	50
W 01086 †	2-5/8" x 1-1/8"	0.7100	—	50
W 01093	3-1/8" x 2-5/8"	1.0600	—	25
W 01094	3-1/8" x 2-1/8"	1.1000	—	25
W 01095	3-1/8" x 1-5/8"	1.0100	—	25
W 10101	3-5/8" x 3-1/8"	1.2200	—	25
W 10108	4-1/8" x 3-5/8"	1.8700	—	20
W 10109	4-1/8" x 3-1/8"	0.7600	—	20
W 10110	4-1/8" x 2-5/8"	1.8800	—	15
W 10111	4-1/8" x 2-1/8"	1.9700	—	20



45° Elbow

C x C
Wrot Style #: WE-504



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 03005 †	1/4"	0.0100	50	2,000
W 03012 †	3/8"	0.0100	50	2,800
W 03021 †	1/2"	0.0300	50	850
W 03026 †	5/8"	0.0400	50	500
W 03030 †	3/4"	0.0600	50	500
W 03034 †	7/8"	0.0900	25	250
W 03044 †	1-1/8"	0.1600	25	250
W 03050 †	1-3/8"	0.2500	10	100
W 03055 †	1-5/8"	0.3600	10	100
W 03059 †	2-1/8"	0.6000	10	50
W 03063 †	2-5/8"	1.0000	5	25
W 03067	3-1/8"	1.5300	2	20
W 03070	3-5/8"	2.8100	2	10
W 03073	4-1/8"	3.1400	—	5



45° Elbow • Street

FTG x C
Wrot Style #: WE-505



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 03312 †	3/8"	0.0100	100	3,400
W 03321 †	1/2"	0.0300	100	1,500
W 03326 †	5/8"	0.0300	50	500
W 03330 †	3/4"	0.0600	50	500
W 03334 †	7/8"	0.0900	25	250
W 03344 †	1-1/8"	0.1500	25	250
W 03350 †	1-3/8"	0.2400	10	100
W 03355 †	1-5/8"	0.3300	10	100
W 03359 †	2-1/8"	0.6100	5	50
W 03363 †	2-5/8"	1.0500	2	20
W 03368	3-1/8"	1.5200	2	10
W 03373	4-1/8"	3.1100	—	5



45° Elbow

FTG x FTG
Wrot Style #: WE-507



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 03621 †	1/2"	0.0200	50	1,700
W 03626 †	5/8"	0.0400	50	750
W 03634 †	7/8"	0.1000	25	250
W 03644 †	1-1/8"	0.1800	10	100

COPPER FITTINGS



90° Elbow • Short Radius

C x C

Wrot Style #: WE-500



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 02003 †	1/4"	0.0100	50	2,000
W 02009 †	3/8"	0.0200	50	1,700
W 02017 †	1/2"	0.0300	50	1,000
W 02022 †	5/8"	0.0500	100	1,000
W 02028 †	3/4"	0.0800	50	500
W 02034 †	7/8"	0.1100	50	500
W 02040 †	1"	0.2200	20	200
W 02047 †	1-1/8"	0.2400	25	250
W 02084 †	1-3/8"	0.3000	10	100
W 02085 †	1-5/8"	0.4200	10	100
W 02086 †	2-1/8"	0.7600	10	50
W 02087 †	2-5/8"	1.1900	5	25
W 02088 †	3-1/8"	1.8800	5	25
W 02089 †	3-5/8"	2.7700	2	10
W 02090 †	4-1/8"	4.0000	2	10
W 02097 †	6-1/8"	13.7300	—	1
W 02011 †	3/8" x 1/4"	0.0200	50	750
W 02019 †	1/2" x 3/8"	0.0300	50	750
W 02023 †	5/8" x 1/2"	0.0500	50	500
W 02025 †	5/8" x 3/8"	0.0500	50	500
W 02029 †	3/4" x 5/8"	0.0600	50	500
W 02030 †	3/4" x 1/2"	0.0700	50	500
W 02035 †	7/8" x 3/4"	0.1100	50	500
W 02036 †	7/8" x 5/8"	0.1100	50	500
W 02037 †	7/8" x 1/2"	0.1100	50	500
W 02049 †	1-1/8" x 7/8"	0.1700	25	250
W 02050 †	1-1/8" x 3/4"	0.1600	25	250
W 02051 †	1-1/8" x 5/8"	0.1800	25	250
W 02052 †	1-1/8" x 1/2"	0.2000	25	150
W 02056 †	1-3/8" x 1-1/8"	0.3200	20	200
W 02077 †	1-5/8" x 1-3/8"	0.3300	5	100
W 02078 †	2-1/8" x 1-5/8"	0.6000	5	50



90° Elbow • Long Radius

C x C

Wrot Style #: WE-500L



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 02701 †	3/16"	0.0000	50	1,000
W 02715 †	1/4"	0.0100	50	2,000
W 02710 †	5/16"	0.0100	50	1,700
W 02716 †	3/8"	0.0200	50	1,700
W 02717 †	1/2"	0.0400	50	500
W 02722 †	5/8"	0.0600	50	500
W 02728 †	3/4"	0.0900	50	500
W 02734 †	7/8"	0.1300	25	250
W 02747 †	1-1/8"	0.2700	10	100
W 02055 †	1-3/8"	0.4200	10	100
W 02063 †	1-5/8"	0.6000	5	50
W 02072 †	2-1/8"	1.2300	5	25
W 02082 †	2-5/8"	2.0500	5	25
W 02092 †	3-1/8"	3.1300	2	10
W 02093 †	3-5/8"	5.5300	1	5
W 02095 †	4-1/8"	7.9800	—	1

(CONTINUED NEXT COLUMN)

(CONTINUED FROM PREVIOUS COLUMN)

Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 02711 †	3/8" x 1/4"	0.0100	50	3,000
W 02719 †	1/2" x 3/8"	0.0300	50	2,000
W 02723 †	5/8" x 1/2"	0.0400	50	1,000
W 02725 †	5/8" x 3/8"	0.0300	50	1,000
W 02735 †	7/8" x 3/4"	0.1200	25	250
W 02736 †	7/8" x 5/8"	0.0900	50	500
W 02749 †	1-1/8" x 7/8"	0.1700	10	100
W 02756 †	1-3/8" x 1-1/8"	0.3100	10	100
W 02058 †	1-3/8" x 7/8"	0.3700	10	100
W 02060 †	1-3/8" x 5/8"	0.3700	10	100
W 02064 †	1-5/8" x 1-3/8"	0.4400	5	50
W 02065 †	1-5/8" x 1-1/8"	0.5200	5	50
W 02067 †	1-5/8" x 7/8"	0.5100	5	50
W 02073 †	2-1/8" x 1-5/8"	0.9800	2	20
W 02074 †	2-1/8" x 1-3/8"	0.9400	2	20
W 02075 †	2-1/8" x 1-1/8"	0.9700	2	20
W 02083 †	2-5/8" x 2-1/8"	1.5300	2	20



90° Elbow Short Radius • Street

FTG x C

Wrot Style #: WE-503



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 02305 †	1/4"	0.0100	50	2,000
W 02312 †	3/8"	0.0200	50	1,700
W 02321 †	1/2"	0.0300	50	750
W 02326 †	5/8"	0.0500	50	500
W 02330 †	3/4"	0.0900	25	250
W 02334 †	7/8"	0.1100	25	250
W 02344 †	1-1/8"	0.2200	25	250
W 02384 †	1-3/8"	0.2900	25	125
W 02385 †	1-5/8"	0.4400	10	100
W 02386 †	2-1/8"	0.7700	10	50
W 02387 †	2-5/8"	1.2300	5	25
W 02388 †	3-1/8"	1.9400	2	20
W 02389 †	3-5/8"	2.7800	1	10
W 02390 †	4-1/8"	4.0300	2	10



**90° Elbow
Long Radius • Street**
FTG x C
Wrot Style #: WE-503L



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 02809 †	3/8"	0.0200	50	1,700
W 02817 †	1/2"	0.0400	50	500
W 02822 †	5/8"	0.0600	50	500
W 02828 †	3/4"	0.0900	25	250
W 02834 †	7/8"	0.1300	25	250
W 02847 †	1-1/8"	0.2600	10	100
W 02350 †	1-3/8"	0.4200	10	100
W 02355 †	1-5/8"	0.6000	5	50
W 02359 †	2-1/8"	1.2300	5	25
W 02363 †	2-5/8"	2.0800	5	25
W 02368	3-1/8"	3.1200	2	10
W 02393	3-5/8"	5.5200	1	5
W 02395	4-1/8"	8.0700	—	1



90° Elbow • Short Radius
FTG x FTG
Wrot Style #: WE-506



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 02612 †	3/8"	0.0200	50	2,800
W 02621 †	1/2"	0.0300	50	750
W 02626 †	5/8"	0.0500	50	500
W 02634 †	7/8"	0.1100	25	250
W 02644 †	1-1/8"	0.2200	10	100
W 02684 †	1-3/8"	0.3100	10	100
W 02685 †	1-5/8"	0.4300	5	50
W 02686 †	2-1/8"	0.7900	1	10
W 02687 †	2-5/8"	1.2500	1	10
W 02688	3-1/8"	2.0800	1	10
W 02689	3-5/8"	2.6300	1	10
W 02690	4-1/8"	3.8800	1	5



90° Elbow • Long Radius
FTG x FTG
Wrot Style #: WE-506L



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 02650 †	1-3/8"	0.4400	5	50
W 02655 †	1-5/8"	0.6300	5	50
W 02659 †	2-1/8"	1.2300	1	10



90° Elbow • Forged Brass
C x F
Wrot Style #: WE-502



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 02206	1/4" x 1/4"	0.1000	50	450
W 02207	1/4" x 1/8"	0.0700	50	800
W 02214	3/8" x 3/8"	0.1000	50	600
W 02216	3/8" x 1/8"	0.0800	50	700
W 02225	3/8" x 3/8"	0.1100	25	300
W 02226	3/8" x 1/4"	0.1000	25	350



90° Elbow • Forged Brass
C x M
Wrot Style #: WE-501



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 02106	1/4" x 1/4"	0.0700	50	700
W 02107	1/4" x 1/8"	0.0400	50	1,200
W 02115	1/4" x 1/4"	0.0600	50	800
W 02116	1/4" x 1/8"	0.0600	50	800
W 02125	1/4" x 3/8"	0.1000	25	400
W 02132	1/4" x 3/8"	0.1600	10	240



90° Fitting Reducer
FTG x C
Wrot Style #: WC-403



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 01302 †	1/4" x 1/8	0.0000	50	2,000
W 01306 †	3/8" x 1/4"	0.0100	50	2,000
W 01312 †	1/2" x 3/8"	0.0200	50	2,000
W 01314 †	1/2" x 1/4"	0.0100	50	2,800
W 01315 †	5/8" x 1/2"	0.0300	50	750
W 01317 †	5/8" x 3/8"	0.0200	50	1,700
W 01320 †	3/4" x 5/8"	0.0400	100	1,000
W 01321 †	3/4" x 1/2"	0.0400	100	900
W 01322 †	3/4" x 3/8"	0.0400	100	900
W 01325 †	7/8" x 3/4"	0.0600	50	500
W 01326 †	7/8" x 5/8"	0.0600	50	500
W 01327 †	7/8" x 1/2"	0.0600	50	500
W 01337 †	1-1/8" x 7/8"	0.1100	25	250
W 01338 †	1-1/8" x 3/4"	0.1000	25	250
W 01339 †	1-1/8" x 5/8"	0.1000	25	250
W 01340 †	1-1/8" x 1/2"	0.1000	20	200
W 01343 †	1-3/8" x 1-1/8"	0.1700	10	100
W 01345 †	1-3/8" x 7/8"	0.1700	10	100
W 01347 †	1-3/8" x 5/8"	0.1600	10	100
W 01350 †	1-5/8" x 1-3/8"	0.2300	10	100
W 01351 †	1-5/8" x 1-1/8"	0.2400	10	100
W 01353 †	1-5/8" x 7/8"	0.2300	10	100

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COPPER FITTINGS



90° Fitting Reducer (Continued)

FTG x C
Wrot Style #: WC-403



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 01355 †	1-5/8" x 5/8"	0.2200	10	100
W 01358 †	2-1/8" x 1-5/8"	0.4400	—	100
W 01359 †	2-1/8" x 1-3/8"	0.4300	—	100
W 01360 †	2-1/8" x 1-1/8"	0.4500	—	100
W 01362 †	2-1/8" x 7/8"	0.4300	—	100
W 01364 †	2-1/8" x 5/8"	0.4200	—	100
W 01367 †	2-5/8" x 2-1/8"	0.6200	—	50
W 01368 †	2-5/8" x 1-5/8"	0.5700	—	50
W 01369 †	2-5/8" x 1-3/8"	0.6200	—	50
W 01370 †	2-5/8" x 1-1/8"	0.6300	—	50
W 01376	3-1/8" x 2-5/8"	1.0000	—	25
W 01377	3-1/8" x 2-1/8"	0.8900	—	25
W 01378	3-1/8" x 1-5/8"	0.9200	—	50
W 01379	3-1/8" x 1-3/8"	1.0100	—	50
W 01381	3-5/8" x 3-1/8"	1.2800	—	20
W 01382	3-5/8" x 2-5/8"	1.3700	—	20
W 01383	3-5/8" x 2-1/8"	1.4700	—	20
W 01386	4-1/8" x 3-5/8"	1.7400	—	20
W 01387	4-1/8" x 3-1/8"	1.7700	—	15
W 01388	4-1/8" x 2-5/8"	1.8300	—	15
W 01389	4-1/8" x 2-1/8"	1.8600	—	15



Hanger High Ear

C
Wrot Style #: W-124



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
A 03167	5/8"	0.0300	100	10,000
A 03168	7/8"	0.0400	25	500
A 03171	1-1/8"	0.0400	25	250



Plug • Fitting

FTG
Wrot Style #: WC-416
Brass



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
A 01402	1/4"	0.0100	50	500
A 01422	3/8"	0.0100	100	4,000
A 01392	1/2"	0.0200	50	2,000
A 01504	5/8"	0.0300	50	1,200
A 02273	3/4"	0.0500	10	560
A 01529	7/8"	0.0700	50	600
A 01556	1-1/8"	0.1200	25	375
A 01590	1-3/8"	0.2000	15	180
A 01628	1-5/8"	0.2800	10	120



P-Trap • Pressure

C x C
Wrot Style #: WE-554P



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 60999	5/8"	0.3800	10	50
W 61008	3/4"	0.5100	10	50
W 61000	7/8"	0.6300	5	25
W 61001	1-1/8"	0.8700	3	15
W 61002	1-3/8"	1.1600	4	20
W 61003	1-5/8"	2.2800	4	4
W 61009	2-1/8"	3.8700	—	3



P-Trap • Suction Line Long Radius

C x C
Wrot Style #: WE-554PL



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 60998	5/8"	0.1500	30	150
W 60997	3/4"	0.3000	20	100
W 60996	7/8"	0.3600	15	75
W 60995	1-1/8"	0.5800	15	75
W 60994	1-3/8"	0.9700	5	25
W 60993	1-5/8"	1.8400	—	5
W 60992	2-1/8"	3.6100	—	3



Return Bend

C x C
Wrot Style #: WE-512



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 06025 †	3/8" x 4-1/2"	0.1000	25	150
W 06020 †	3/8" x 1-1/2"	0.0200	25	850
W 06048 †	1/2" x 6"	0.2100	—	100
W 06045 †	1/2" x 4"	0.1400	—	200
W 06041 †	1/2" x 3"	0.1100	25	250
W 06036 †	1/2" x 2"	0.0600	50	300
W 06035 †	1/2" x 12-9/32"	0.0800	50	300
W 06032 †	1/2" x 1-1/2"	0.0600	50	500
W 06069 †	5/8" x 6"	0.3000	5	30
W 06062 †	5/8" x 3-3/8"	0.1800	10	100
W 06060 †	5/8" x 3"	0.1600	25	150
W 06058 †	5/8" x 2-1/2"	0.1400	25	250
W 06056 †	5/8" x 2-1/4"	0.1300	25	250
W 06053 †	5/8" x 1-7/8"	0.1100	25	250
W 06051 †	5/8" x 19/16"	0.1000	25	250
W 06084 †	3/4" x 4"	0.2500	—	120
W 06081 †	3/4" x 3-3/8"	0.2400	10	90
W 06077 †	3/4" x 2-1/2"	0.1700	10	100
W 06074 †	3/4" x 2-1/8"	0.1600	10	100
W 06073 †	3/4" x 2"	0.1500	10	100
W 06099 †	7/8" x 12"	0.8800	—	15
W 06095 †	7/8" x 3-3/8"	0.2900	10	100
W 06092 †	7/8" x 2-1/2"	0.2300	10	100
W 60111 †	1-1/8" x 3-1/4"	0.4900	5	50
W 60110 †	1-1/8" x 3"	0.4700	5	50
W 60121 †	1-3/8" x 3-3/4"	0.6500	5	50
W 60131 †	1-5/8" x 4-1/2"	1.0000	5	25
W 60140 †	2-1/8" x 5-1/2"	1.9200	5	25



Tee

C x C x C
Wrot Style #: WT-600



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 40302 †	3/16"	0.0100	50	1,700
W 40306 †	1/4"	0.0100	100	2,400
W 40313 †	5/16"	0.0100	50	1,700
W 04000 †	3/8"	0.0200	50	1,700
W 04001 †	1/2"	0.0400	50	500
W 04006 †	5/8"	0.0700	50	500
W 04017 †	3/4"	0.1200	25	250
W 04031 †	7/8"	0.1600	25	250
W 04048 †	1-1/8"	0.2900	10	100
W 04068 †	1-3/8"	0.4200	5	50
W 04084 †	1-5/8"	0.6000	5	50
W 40102 †	2-1/8"	1.1400	5	25
W 40123 †	2-5/8"	1.7200	2	20
W 40152 †	3-1/8"	2.7700	2	10
W 40190 †	3-5/8"	5.6600	1	5
W 40200 †	4-1/8"	5.9900	1	5
W 40400 †	5-1/8"	12.3800	—	1
W 40500 †	6-1/8"	20.8500	—	1



Tee • Reducing

C x C x C
Wrot Style #: WT-600



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 40368 †	1/4" x 1/4" x 3/8"	0.0300	50	750
W 40308 †	1/4" x 1/4" x 3/16"	0.0100	50	2,000
W 40334 †	5/16" x 5/16" x 3/8"	0.0300	50	750
W 04016 †	3/8" x 3/8" x 5/8"	0.0800	50	500
W 04005 †	3/8" x 3/8" x 1/2"	0.0400	50	500
W 40324 †	3/8" x 3/8" x 1/4"	0.0200	50	1,700
W 40330 †	3/8" x 1/4" x 3/8"	0.0200	50	500
W 40332 †	3/8" x 1/4" x 1/4"	0.0200	50	1,700
W 04015 †	1/2" x 1/2" x 5/8"	0.0900	50	500
W 04002 †	1/2" x 1/2" x 3/8"	0.0400	50	500
W 40350 †	1/2" x 1/2" x 1/4"	0.0400	50	500
W 04003 †	1/2" x 3/8" x 1/2"	0.0500	50	500
W 04004 †	1/2" x 3/8" x 3/8"	0.0400	50	500
W 40358 †	1/2" x 3/8" x 1/4"	0.0400	50	750
W 40363 †	1/2" x 1/4" x 1/2"	0.0500	50	750
W 40364 †	1/2" x 1/4" x 3/8"	0.0400	50	750
W 40366 †	1/2" x 1/4" x 1/4"	0.0500	50	450
W 04067 †	5/8" x 5/8" x 1-1/8"	0.3500	10	100
W 04047 †	5/8" x 5/8" x 7/8"	0.1100	25	250
W 04029 †	5/8" x 5/8" x 3/4"	0.1000	25	250
W 04007 †	5/8" x 5/8" x 1/2"	0.0800	50	500
W 04008 †	5/8" x 5/8" x 3/8"	0.0600	50	500
W 04014 †	5/8" x 5/8" x 1/4"	0.0800	50	500
W 04009 †	5/8" x 1/2" x 5/8"	0.0900	50	500
W 04010 †	5/8" x 1/2" x 1/2"	0.0800	50	500
W 04011 †	5/8" x 1/2" x 3/8"	0.0800	50	500
W 04012 †	5/8" x 3/8" x 5/8"	0.0900	50	500
W 40367 †	5/8" x 3/8" x 1/2"	0.0800	50	500
W 04013 †	5/8" x 3/8" x 3/8"	0.0900	50	500
W 04046 †	3/4" x 3/4" x 7/8"	0.1500	25	250
W 04018 †	3/4" x 3/4" x 5/8"	0.1000	25	250
W 04019 †	3/4" x 3/4" x 1/2"	0.1000	25	250
W 04020 †	3/4" x 3/4" x 3/8"	0.1000	25	250
W 04021 †	3/4" x 5/8" x 3/4"	0.1300	25	225
W 04022 †	3/4" x 5/8" x 5/8"	0.1100	25	250
W 04023 †	3/4" x 5/8" x 1/2"	0.1100	25	225
W 04025 †	3/4" x 1/2" x 3/4"	0.1500	25	250
W 04026 †	3/4" x 1/2" x 5/8"	0.1400	25	225
W 04027 †	3/4" x 1/2" x 1/2"	0.1100	25	250
W 04065 †	7/8" x 7/8" x 1-1/8"	0.2200	10	100
W 04032 †	7/8" x 7/8" x 3/4"	0.1700	25	250
W 04033 †	7/8" x 7/8" x 5/8"	0.1200	25	250
W 04034 †	7/8" x 7/8" x 1/2"	0.1100	25	250
W 04035 †	7/8" x 7/8" x 3/8"	0.1100	25	250
W 04036 †	7/8" x 3/4" x 7/8"	0.1900	25	250
W 04037 †	7/8" x 3/4" x 3/4"	0.1700	25	250
W 04041 †	7/8" x 5/8" x 7/8"	0.1600	25	250
W 04042 †	7/8" x 5/8" x 3/4"	0.1700	25	150
W 04043 †	7/8" x 5/8" x 5/8"	0.1300	25	250
W 04044 †	7/8" x 5/8" x 1/2"	0.1200	25	250
W 04045 †	7/8" x 5/8" x 3/8"	0.1500	25	225
W 40230 †	7/8" x 1/2" x 7/8"	0.1900	25	250
W 40231 †	7/8" x 1/2" x 5/8"	0.1700	25	250
W 40232 †	7/8" x 1/2" x 1/2"	0.1200	25	250
W 40101 †	1-1/8" x 1-1/8" x 1-5/8"	0.4700	5	50
W 04082 †	1-1/8" x 1-1/8" x 1-3/8"	0.3100	5	50
W 04049 †	1-1/8" x 1-1/8" x 7/8"	0.2400	10	100
W 04050 †	1-1/8" x 1-1/8" x 3/4"	0.2700	10	100
W 04051 †	1-1/8" x 1-1/8" x 5/8"	0.2100	10	100

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COPPER FITTINGS



Tee • Reducing

(Continued from previous page)

C x C x C

Wrot Style #: WT-600



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 04052 †	1-1/8" x 1-1/8" x 1/2"	0.1900	10	100
W 04055 †	1-1/8" x 7/8" x 1-1/8"	0.3000	10	100
W 04056 †	1-1/8" x 7/8" x 7/8"	0.2500	10	100
W 04057 †	1-1/8" x 7/8" x 3/4"	0.4300	10	90
W 04058 †	1-1/8" x 7/8" x 5/8"	0.2300	10	100
W 04059 †	1-1/8" x 7/8" x 1/2"	0.2100	10	100
W 40233 †	1-1/8" x 3/4" x 1-1/8"	0.3300	10	100
W 40234 †	1-1/8" x 3/4" x 7/8"	0.3000	10	90
W 40235 †	1-1/8" x 3/4" x 3/4"	0.3100	10	100
W 40236 †	1-1/8" x 3/4" x 5/8"	0.3500	10	90
W 40061 †	1-1/8" x 5/8" x 1-1/8"	0.3000	10	100
W 40062 †	1-1/8" x 5/8" x 7/8"	0.2800	10	100
W 40063 †	1-1/8" x 5/8" x 5/8"	0.2100	10	100
W 40122 †	1-3/8" x 1-3/8" x 2-1/8"	0.8900	2	20
W 40100 †	1-3/8" x 1-3/8" x 1-5/2"	0.4900	5	50
W 04069 †	1-3/8" x 1-3/8" x 1-1/8"	0.4100	5	50
W 04070 †	1-3/8" x 1-3/8" x 7/8"	0.3500	5	50
W 04071 †	1-3/8" x 1-3/8" x 5/8"	0.3200	5	50
W 04072 †	1-3/8" x 1-3/8" x 1/2"	0.2900	5	50
W 04073 †	1-3/8" x 1-1/8" x 1-3/8"	0.4800	5	50
W 04074 †	1-3/8" x 1-1/8" x 1-1/8"	0.4600	5	50
W 04075 †	1-3/8" x 1-1/8" x 7/8"	0.3800	5	50
W 04076 †	1-3/8" x 1-1/8" x 5/8"	0.3600	5	50
W 04078 †	1-3/8" x 7/8" x 1-3/8"	0.4500	5	50
W 04079 †	1-3/8" x 7/8" x 1-1/8"	0.4600	5	50
W 04080 †	1-3/8" x 7/8" x 7/8"	0.3700	5	50
W 04081 †	1-3/8" x 7/8" x 5/8"	0.3400	5	50
W 04083 †	1-3/8" x 5/8" x 1-3/8"	0.5700	5	50
W 40121 †	1-5/8" x 1-5/8" x 2-1/8"	1.2100	2	20
W 04085 †	1-5/8" x 1-5/8" x 1-3/8"	0.5700	5	50
W 04086 †	1-5/8" x 1-5/8" x 1-1/8"	0.5200	5	50
W 04087 †	1-5/8" x 1-5/8" x 7/8"	0.4700	5	50
W 04088 †	1-5/8" x 1-5/8" x 5/8"	0.4200	5	50
W 04089 †	1-5/8" x 1-5/8" x 1/2"	0.4100	5	50
W 04090 †	1-5/8" x 1-3/8" x 1-5/8"	0.6800	5	50
W 04091 †	1-5/8" x 1-3/8" x 1-3/8"	0.6900	5	50
W 04092 †	1-5/8" x 1-3/8" x 1-1/8"	0.5700	5	50
W 04093 †	1-5/8" x 1-3/8" x 7/8"	0.5700	5	50
W 04094 †	1-5/8" x 1-3/8" x 5/8"	0.4500	5	50
W 04095 †	1-5/8" x 1-1/8" x 1-5/8"	0.6800	5	50
W 04096 †	1-5/8" x 1-1/8" x 1-3/8"	0.6500	5	50
W 04097 †	1-5/8" x 1-1/8" x 1-1/8"	0.6100	5	50
W 04098 †	1-5/8" x 1-1/8" x 7/8"	0.5600	5	50
W 40237 †	1-5/8" x 1-1/8" x 5/8"	0.4500	5	30
W 04099 †	1-5/8" x 7/8" x 1-5/8"	0.6700	5	50
W 40239 †	1-5/8" x 7/8" x 1-3/8"	0.7500	5	50
W 40240 †	1-5/8" x 7/8" x 1-1/8"	0.5200	5	50
W 40238 †	1-5/8" x 7/8" x 7/8"	0.5500	5	50
W 40243 †	1-5/8" x 7/8" x 5/8"	0.4700	5	50
W 40244 †	1-5/8" x 5/8" x 1-5/8"	0.6600	5	50
W 40153 †	2-1/8" x 2-1/8" x 3-1/8"	2.5500	1	10
W 40144 †	2-1/8" x 2-1/8" x 2-5/8"	1.4600	1	10
W 40103 †	2-1/8" x 2-1/8" x 1-5/8"	0.9900	5	50
W 40104 †	2-1/8" x 2-1/8" x 1-3/8"	0.8500	5	50
W 40105 †	2-1/8" x 2-1/8" x 1-1/8"	0.8800	5	50
W 40106 †	2-1/8" x 2-1/8" x 7/8"	0.8300	5	50
W 40107 †	2-1/8" x 2-1/8" x 5/8"	0.6700	5	50
W 40108 †	2-1/8" x 7/8" x 1/2"	0.6800	2	20
W 40109 †	2-1/8" x 1-5/8" x 2-1/8"	1.3100	2	20

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(CONTINUED FROM PREVIOUS COLUMN)

Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 40110 †	2-1/8" x 1-5/8" x 1-5/8"	1.1500	2	20
W 40111 †	2-1/8" x 1-5/8" x 1-3/8"	0.8600	2	20
W 40112 †	2-1/8" x 1-5/8" x 1-1/8"	1.0600	2	20
W 40113 †	2-1/8" x 1-5/8" x 7/8"	0.7500	2	20
W 40114 †	2-1/8" x 1-5/8" x 5/8"	0.7700	5	50
W 40115 †	2-1/8" x 1-3/8" x 2-1/8"	1.3000	2	20
W 40116 †	2-1/8" x 1-3/8" x 1-5/8"	1.1400	2	20
W 40117 †	2-1/8" x 1-3/8" x 1-3/8"	1.0900	2	20
W 40118 †	2-1/8" x 1-3/8" x 1-1/8"	0.9500	2	20
W 40119 †	2-1/8" x 1-3/8" x 7/8"	0.7600	5	50
W 40120 †	2-1/8" x 1-3/8" x 5/8"	0.7800	5	20
W 40245 †	2-1/8" x 1-1/8" x 2-1/8"	1.6400	5	25
W 40247 †	2-1/8" x 1-1/8" x 1-1/8"	1.0600	5	50
W 40248 †	2-1/8" x 7/8" x 2-1/8"	1.7100	5	25
W 40249 †	2-1/8" x 5/8" x 2-1/8"	1.6600	5	25
W 40124 †	2-5/8" x 2-5/8" x 2-1/8"	1.5900	2	20
W 40125 †	2-5/8" x 2-5/8" x 1-5/8"	1.4900	2	20
W 40126 †	2-5/8" x 2-5/8" x 1-3/8"	1.8700	2	20
W 40127 †	2-5/8" x 2-5/8" x 1-1/8"	1.8300	2	20
W 40128 †	2-5/8" x 2-5/8" x 7/8"	1.8300	1	10
W 40129 †	2-5/8" x 2-5/8" x 5/8"	2.0500	1	10
W 40130 †	2-5/8" x 2-1/8" x 2-5/8"	2.3000	4	20
W 40131 †	2-5/8" x 2-1/8" x 2-1/8"	1.8400	2	20
W 40132 †	2-5/8" x 2-1/8" x 1-5/8"	2.0900	4	20
W 40133 †	2-5/8" x 2-1/8" x 1-3/8"	2.1200	4	20
W 40134 †	2-5/8" x 2-1/8" x 1-1/8"	2.1000	4	20
W 40135 †	2-5/8" x 2-1/8" x 7/8"	2.0600	4	20
W 40136 †	2-5/8" x 2-1/8" x 5/8"	2.2000	4	20
W 40137 †	2-5/8" x 1-5/8" x 2-5/8"	2.3200	4	20
W 40138 †	2-5/8" x 1-5/8" x 2-1/8"	1.8400	4	20
W 40139 †	2-5/8" x 1-5/8" x 1-5/8"	2.1100	4	20
W 40140 †	2-5/8" x 1-5/8" x 1-3/8"	2.1700	4	20
W 40141 †	2-5/8" x 1-5/8" x 1-1/8"	1.8300	4	20
W 40142 †	2-5/8" x 1-5/8" x 7/8"	2.3600	4	20
W 40143 †	2-5/8" x 1-5/8" x 5/8"	2.3600	4	20
W 40220 †	2-5/8" x 1-3/8" x 2-5/8"	2.3500	4	20
W 40250 †	2-5/8" x 1-3/8" x 2-1/8"	1.8200	4	20
W 40251 †	2-5/8" x 1-3/8" x 1-5/8"	2.4700	4	20
W 40252 †	2-5/8" x 1-3/8" x 1-3/8"	1.9600	4	20
W 40253 †	2-5/8" x 1-3/8" x 1-1/8"	2.4700	4	20
W 40254 †	2-5/8" x 1-3/8" x 7/8"	2.1800	4	20
W 40255 †	2-5/8" x 1-3/8" x 5/8"	2.4700	4	20
W 40221 †	2-5/8" x 1-1/8" x 2-5/8"	2.3900	4	20
W 40256 †	2-5/8" x 1-1/8" x 2-1/8"	1.9700	4	20
W 40257 †	2-5/8" x 1-1/8" x 1-5/8"	2.1500	4	20
W 40258 †	2-5/8" x 1-1/8" x 1-3/8"	2.0400	4	20
W 40259 †	2-5/8" x 1-1/8" x 1-1/8"	2.2700	4	20
W 40222 †	2-5/8" x 7/8" x 2-5/8"	2.4100	4	20
W 40151	3-1/8" x 3-1/8" x 2-5/8"	2.4500	2	10
W 40150	3-1/8" x 3-1/8" x 2-1/8"	2.3000	2	20
W 40149	3-1/8" x 3-1/8" x 1-5/8"	2.1800	2	10
W 40148	3-1/8" x 3-1/8" x 1-3/8"	2.3800	2	10
W 40147	3-1/8" x 3-1/8" x 1-1/8"	1.9600	2	20
W 40146	3-1/8" x 3-1/8" x 7/8"	1.4900	2	20
W 40145	3-1/8" x 3-1/8" x 5/8"	1.3800	2	20
W 40159	3-1/8" x 2-5/8" x 3-1/8"	2.9600	2	10
W 40158	3-1/8" x 2-5/8" x 2-5/8"	4.5200	2	10
W 40157	3-1/8" x 2-5/8" x 2-1/8"	2.6800	2	10
W 40156	3-1/8" x 2-5/8" x 1-5/8"	2.6300	2	10
W 40155	3-1/8" x 2-5/8" x 1-3/8"	2.6200	2	10
W 40154	3-1/8" x 2-5/8" x 1-1/8"	2.0200	2	20
W 40167	3-1/8" x 2-1/8" x 3-1/8"	3.0700	2	10
W 40165	3-1/8" x 2-5/8" x 2-5/8"	4.6400	2	10
W 40164	3-1/8" x 2-5/8" x 2-1/8"	2.7500	2	10
W 40163	3-1/8" x 2-5/8" x 1-5/8"	2.5700	2	10

(CONTINUED NEXT COLUMN)

(CONTINUED FROM PREVIOUS COLUMN)

Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 40162	3-1/8" x 2-5/8" x 1-3/8"	2.6100	2	10
W 40161	3-1/8" x 2-5/8" x 1-1/8"	2.0400	2	20
W 40174	3-1/8" x 1-5/8" x 3-1/8"	2.9700	2	10
W 40181	3-1/8" x 1-3/8" x 3-1/8"	3.1400	2	10
W 40178	3-1/8" x 1-1/8" x 3-1/8"	3.0200	2	10
W 40179	3-1/8" x 7/8" x 3-1/8"	3.0300	2	10
W 40198	4-1/8" x 4-1/8" x 3-1/8"	4.9400	1	5
W 40197	4-1/8" x 4-1/8" x 2-5/8"	5.1600	1	5
W 40196	4-1/8" x 4-1/8" x 2-1/8"	4.5200	1	10
W 40195	4-1/8" x 4-1/8" x 1-5/8"	4.4700	1	10
W 40194	4-1/8" x 4-1/8" x 1-3/8"	4.5500	1	10
W 40193	4-1/8" x 4-1/8" x 1-1/8"	3.0500	1	10
W 40192	4-1/8" x 4-1/8" x 7/8"	2.8900	1	10
W 40191	4-1/8" x 4-1/8" x 5/8"	2.8900	1	10
W 40208	4-1/8" x 3-1/8" x 4-1/8"	8.6600	1	5
W 40206	4-1/8" x 3-1/8" x 3-1/8"	5.1200	1	5
W 40205	4-1/8" x 3-1/8" x 2-5/8"	5.6100	1	5
W 40204	4-1/8" x 3-1/8" x 2-1/8"	4.7600	1	5
W 40212	4-1/8" x 2-5/8" x 4-1/8"	7.7900	1	5
W 40216	4-1/8" x 2-1/8" x 4-1/8"	8.9500	1	5
W 40215	4-1/8" x 1-5/8" x 4-1/8"	8.5100	1	5
W 40214	4-1/8" x 1-3/8" x 4-1/8"	8.5700	1	5
W 40213	4-1/8" x 1-1/8" x 4-1/8"	9.3300	1	5
W 40503	6-1/8" x 6-1/8" x 3-1/8"	11.0000	—	1
W 40504	6-1/8" x 6-1/8" x 2-5/8"	11.1000	—	1
W 40505	6-1/8" x 6-1/8" x 2-1/8"	9.5400	—	1



Tee • Forged Brass

C x C x F
Wrot Style #: WT-602



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 04208	1/4" x 1/4" x 1/4"	0.0900	50	450
W 04209	1/4" x 1/4" x 1/8"	0.0400	50	1,200
W 04228	3/8" x 3/8" x 3/8"	0.1500	25	350
W 04229	3/8" x 3/8" x 1/4"	0.1000	25	400
W 04230	3/8" x 3/8" x 1/8"	0.1100	10	400
W 04259	1/2" x 1/2" x 3/8"	0.1500	10	240
W 04283	5/8" x 5/8" x 1/2"	0.3300	10	150



Tee

C x FTG x C
Wrot Style #: WT-600F



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 04106 †	5/8"	0.1000	50	300
W 04131 †	7/8"	0.1900	25	150



Union

C x C
Wrot Style #: WC-407



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
W 08001	3/8"	0.1200	25	250
W 08002	1/2"	0.1100	25	250
W 08003	5/8"	0.1600	25	250
W 08004	7/8"	0.3700	25	150
W 08005	1-1/8"	0.5200	10	100



Copper Tube Strap • Two-Hole

Wrot Style #: WS-1100



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
A 01203	1/4"	0.0100	100	4,000
A 01278	3/8"	0.0100	100	5,600
A 01366	1/2"	0.0100	100	3,400
A 02529	5/8"	0.0100	100	1,500
A 01467	3/4"	0.0100	100	2,000
A 02574	7/8"	0.0100	50	750
A 02614	1-1/8"	0.0200	50	750
A 02650	1-3/8"	0.0400	50	500
A 02675	1-5/8"	0.0500	50	500
A 02708	2-1/8"	0.0600	50	500



25 ft. Roll Copper Tube Strap Perforated

Wrot Style #: WS-1101



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
A 01211	25 Ft.Roll	1.6300	1	10

Streamline®

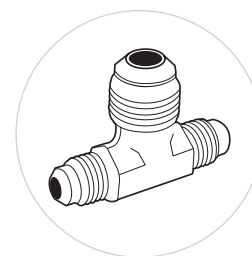
ACCURATELY MACHINED FROM BRASS FORGINGS OR ROD FOR
LEAK-PROOF JOINTS AND FULL FLOW.



BRASS 45° FLARE FITTINGS & FLANGES



▶ **Streamline Brass 45° Flare Fittings and Brass Flanges offer long-term reliability and are the practical solution for critical, sensitive and inaccessible HVACR connections. Each fitting and flange is expertly engineered to resist mechanical pullout and can be assembled and disassembled repeatedly. Conforming to applicable SAE, ASA and MS (Military Standards) standards and suitable for a wide range of pressures and working temperatures, Streamline Brass 45° Flare Fittings and Brass Flanges have been industry preferred for almost a century.**



- Brass 45° Flare Fittings

- Brass 45° Flanges

Streamline®

BRASS 45° FLARE FITTINGS & FLANGES



Streamline® Brass 45° Flare Fittings and Brass Flanges are fabricated from brass forgings or drawn brass rod, eliminating the possibility of seepage by porosity. Fittings and flanges are accurately machined and fully protected against damage during handling, shipping and storage to assure tight leak-proof joints. Smooth interior finish provides unrestricted flow and reduced pressure drop.



- Diameters from 3/16" – 3/4"
- Complete range of universal fittings available
- Recommended max. working pressure (PS):
700 psig, 48 bar

- Conforms to Refrigeration Fitting Standards SAE J5 13, Military Standards MS-35867 through MS35873 inclusive, MS-35919, MS35926, and MS-16993
- Made in the USA



Copper Flare Seal Bonnets



Item No.	Universal Part No.	Flare	Each Wt.	Inner Qty.	Master Qty.
A 04737	B1-3	3/16" - -	0.0009	25	-
A 00414	B1-4	1/4" - -	0.0014	100	7400
A 04935	B1-5	5/16" - -	0.0035	50	3600
A 00415	B1-6	3/8" - -	0.0040	100	7400
A 00416	B1-8	1/2" - -	0.0068	100	4000
A 00485	B1-10	5/8" - -	0.0100	20	1480
A 04738	B1-12	3/4" - -	0.0150	25	1000



Copper Flare Gaskets



Item No.	Universal Part No.	Flare	Each Wt.	Inner Qty.	Master Qty.
A 00401	B2-4	1/4" - -	0.0007	100	24500
A 04811	B2-5	5/16" - -	0.0009	50	3600
A 00402	B2-6	3/8" - -	0.0018	100	4000
A 00403	B2-8	1/2" - -	0.0021	100	7400
A 05186	B2-10	5/8" - -	0.0028	50	3600
A 04822	B2-12	3/4" - -	0.0037	25	1000



90° Elbow • Half Union

Flare to NPTFE



Item No.	Universal Part No.	Flare	NPTFE	Each Wt.	Inner Qty.	Master Qty.
A 00335	E1-4A	1/4" 1/8"	-	0.0455	25	425
A 04890	E1-4B	1/4" 1/4"	-	0.0550	25	250
A 04812	E1-4C	1/4" 3/8"	-	0.0815	25	400
A 04937	E1-6A	3/8" 1/8"	-	0.0800	25	600
A 00337	E1-6B	3/8" 1/4"	-	0.0765	25	400
A 04889	E1-6C	3/8" 3/8"	-	0.1082	25	400
A 04886	E1-6D	3/8" 1/2"	-	0.1600	25	300
A 05044	E1-8B	1/2" 1/4"	-	0.1350	10	240
A 00339	E1-8C	1/2" 3/8"	-	0.1400	15	240
A 04887	E1-8D	1/2" 1/2"	-	0.1800	15	180
A 05072	E1-8E	1/2" 3/4"	-	0.2310	10	120
A 04856	E1-10C	5/8" 3/8"	-	0.2250	10	160
A 04538	E1-10D	5/8" 1/2"	-	0.2400	10	160
A 05054	E1-10E	5/8" 3/4"	-	0.2550	10	120
A 04746	E1-12E	3/4" 3/4"	-	0.3360	10	120



90° Elbow • Union
Flare to Flare



Item No.	Universal Part No.	Flare			Each Wt.	Inner Qty.	Master Qty.
A 00147	E2-4	1/4"	-	-	0.0738	25	250
A 00146	E2-6	3/8"	-	-	0.0950	25	400
A 00145	E2-8	1/2"	-	-	0.1500	15	240
A 04539	E2-10	5/8"	-	-	0.2500	10	160
A 04745	E2-12	3/4"	-	-	0.3650	5	70



90° Elbow
External Flare to Internal Flare Swivel



Item No.	Universal Part No.	Flare			Each Wt.	Inner Qty.	Master Qty.
A 15940	ES4-44	1/4"	-	-	0.1034	4	432
A 15941	ES4-66	3/8"	-	-	0.1331	4	324
A 15943	ES4-88	1/2"	-	-	0.2024	4	280



90° Elbow
External Flare to NPTFI



Item No.	Universal Part No.	Flare	NPTFI		Each Wt.	Inner Qty.	Master Qty.
A 04630	E3-4A	1/4"	1/8"	-	0.0500	25	600
A 05007	E3-4B	1/4"	1/4"	-	0.1400	25	400



Refrigerant Drum Adapter



Item No.	Universal Part No.	Flare	NPSM	Hex	Each Wt.	Inner Qty.	Master Qty.
A 08073	K1-1	1/4"	3/4"	1-1/4"	0.1588	10	160
A 08274	K1-3	3/8"	3/4"	1-1/4"	0.1870	10	160
A 08276	K1-5	1/2"	3/4"	1-1/4"	0.1938	10	160
A 08166	K1-8	1/4"	1/2"	1-1/8"	0.1481	10	240



90° Elbow
External Flare to Internal Flare



Item No.	Universal Part No.	Flare			Each Wt.	Inner Qty.	Master Qty.
A 04898	E4-44	1/4"	-	-	0.0650	25	600
A 08082	E4-66	3/8"	-	-	0.1700	25	300



Nut • Long Forged



Item No.	Universal Part No.	Flare	Hex		Each Wt.	Inner Qty.	Master Qty.
A 00440	N4-4	1/4"	5/8"	-	0.0475	25	600
A 00441	N4-6	3/8"	13/16	-	0.0750	25	600
A 00442	N4-8	1/2"	15/16"	-	0.1083	10	240
A 01112	N4-10	5/8"	1-1/16"	-	0.1850	5	120
A 04731	N4-12	3/4"	1-5/16"	-	0.3450	5	120



90° Elbow • Half Union
Flare to Solder



Item No.	Universal Part No.	Flare			Each Wt.	Inner Qty.	Master Qty.
A 03449	ES2-44	1/4"	-	-	0.0350	25	1000
A 03511	ES2-66	3/8"	-	-	0.0805	20	480
A 07851	ES2-88	1/2"	-	-	0.1200	10	240



Nut • Flare Seal Cap



Item No.	Universal Part No.	Flare	Hex		Each Wt.	Inner Qty.	Master Qty.
A 04544	N5-4	1/4"	9/16"	-	0.0300	50	850
A 04758	N5-5	5/16"	5/8"	-	0.0273	25	1000
A 04545	N5-6	3/8"	3/4"	-	0.0500	25	425
A 04546	N5-8	1/2"	7/8"	-	0.0688	25	600
A 04560	N5-10	5/8"	1-1/16"	-	0.1370	10	240
A 04951	N5-12	3/4"	1-5/16"	-	0.2213	10	160

BRASS 45° FLARE FITTINGS & FLANGES | FITTINGS



Nut • Flare Seal Cap
Finger Tightening

MADE IN
USA

Item No.	Universal Part No.	Flare	Each Wt.	Inner Qty.	Master Qty.
A 16447	NFT5-4	1/4"	-	-	0.0150 2000 2000
A 16448	NFT5-6	3/8"	-	-	0.0375 1000 1000



Nut • Short Forged Reducing

MADE IN
USA

Item No.	Universal Part No.	Flare	Tube Size	Hex	Each Wt.	Inner Qty.	Master Qty.
A 05132	NRS4-43	1/4"	3/16"	5/8"	0.0265	10	400
A 05247	NRS4-54	5/16"	1/4"	11/16"	0.0550	10	720
A 05140	NRS4-64	3/8"	1/4"	13/16"	0.0600	25	600
A 05282	NRS4-65	3/8"	5/16"	13/16"	0.0270	10	400
A 05141	NRS4-86	1/2"	3/8"	15/16"	0.0938	15	360
A 05228	NRS4-108	5/8"	1/2"	1-1/16"	0.1250	15	225



Nut • Short Forged

MADE IN
USA

Item No.	Universal Part No.	Flare	Hex	Each Wt.	Inner Qty.	Master Qty.
A 05238	NS4-3	3/16"	1/2"	-	0.0235	50 1200
A 05051	NS4-4	1/4"	5/8"	-	0.0350	50 1200
A 05239	NS4-5	5/16"	11/16"	-	0.0400	25 1000
A 05052	NS4-6	3/8"	13/16"	-	0.0515	25 600
A 05053	NS4-8	1/2"	15/16"	-	0.0838	15 360
A 05157	NS4-10	5/8"	1-1/16"	-	0.1200	10 240
A 05222	NS4-12	3/4"	1-5/16"	-	0.2350	10 150



Plug • Flare

MADE IN
USA

Item No.	Universal Part No.	Flare	Hex	Each Wt.	Inner Qty.	Master Qty.
A 05045	P2-3	3/16"	3/8"	-	0.0157	15 1260
A 00121	P2-4	1/4"	7/16"	-	0.0218	25 1400
A 00124	P2-5	5/16"	1/2"	-	0.0344	15 540
A 00122	P2-6	3/8"	5/8"	-	0.0700	25 600
A 00123	P2-8	1/2"	3/4"	-	0.0950	25 400
A 04536	P2-10	5/8"	7/8"	-	0.1370	15 360
A 04757	P2-12	3/4"	1-1/16"	-	0.2250	10 160



Plug • Brass Pipe

MADE IN
USA

Item No.	Universal Part No.	Flare	Hex	Each Wt.	Inner Qty.	Master Qty.
A 00250	P3-A	1/8"	1/2"	-	0.0300	50 1200
A 00249	P3-B	1/4"	11/16"	-	0.0555	50 500
A 00425	P3-C	3/8"	11/16"	-	0.0575	25 600
A 04759	P3-D	1/2"	7/8"	-	0.1075	25 150
A 05004	P3-E	3/4"	1-1/8"	-	0.3050	10 100



Bushing • External Pipe Thread to Internal Pipe Thread

MADE IN
USA

Item No.	Universal Part No.	NPTE	NPTI	Hex	Each Wt.	Inner Qty.	Master Qty.
A 08756	R1-AB	1/8"	1/4"	11/16"	0.0538	25	1000
A 00630	R1-BA	1/4"	1/8"	9/16"	0.0200	25	1000
A 00631	R1-CB	3/8"	1/4"	11/16"	0.0337	25	1000
A 00492	R1-DB	1/2"	1/4"	7/8"	0.0800	25	250
A 00632	R1-DC	1/2"	3/8"	7/8"	0.0513	25	600
A 00493	R1-EC	3/4"	3/8"	1-1/16"	0.1108	10	240
A 00633	R1-ED	3/4"	1/2"	1-1/16"	0.0920	10	240



Tee • Two-Way
Flare to Flare to NPTFE

MADE IN
USA

Item No.	Universal Part No.	Flare	NPTFE	Each Wt.	Inner Qty.	Master Qty.
A 00345	T1-4A	1/4"	1/8"	-	0.0663	25 600
A 04859	T1-4B	1/4"	1/4"	-	0.1031	25 400
A 04771	T1-4C	1/4"	3/8"	-	0.1161	15 240
A 00347	T1-6B	3/8"	1/4"	-	0.1200	25 300
A 04922	T1-6C	3/8"	3/8"	-	0.1450	15 180
A 00349	T1-8C	1/2"	3/8"	-	0.1914	15 180



Tee • Three-Way
Flare to Flare to Flare



Item No.	Universal Part No.	Flare			Each Wt.	Inner Qty.	Master Qty.
A 00340	T2-4	1/4"	-	-	0.0650	25	400
A 00342	T2-6	3/8"	-	-	0.1425	15	240
A 00344	T2-8	1/2"	-	-	0.1960	15	180
A 04749	T2-12	3/4"	-	-	0.5020	5	60



Tee • Right Angle Two-Way
NPTFE to Flare to Flare



Item No.	Universal Part No.	NPTFE	Flare		Each Wt.	Inner Qty.	Master Qty.
A 00127	T3-4A	1/8"	1/4"	-	0.0700	25	400
A 04998	T3-4B	1/4"	1/4"	-	0.0875	25	300
A 04941	T3-6C	3/8"	3/8"	-	0.1400	25	300
A 04778	T3-8C	3/8"	1/2"	-	0.1815	15	180



Tee • Three-Way
Internal Branch
Flare to Flare to Flare



Item No.	Universal Part No.	Flare			Each Wt.	Inner Qty.	Master Qty.
A 06330	T6-4	1/4"	-	-	0.0850	25	300



Tee • Three-Way Reducing
Flare to Flare to NPTFE



Item No.	Universal Part No.	Flare	NPTFE		Each Wt.	Inner Qty.	Master Qty.
A 04994	TR2-46	1/4"	3/8"	-	0.1137	25	300
A 04574	TR2-64	3/8"	1/4"	-	0.1340	25	300
A 04547	TR2-68	3/8"	1/2"	-	0.1940	15	180
A 04559	TR2-86	1/2"	3/8"	-	0.1908	15	180



Connector • Half Union
Flare to NPTFE



Item No.	Universal Part No.	Flare	NPTFE	Hex	Each Wt.	Inner Qty.	Master Qty.
A 01117	U1-3A	3/16"	1/8"	7/16"	0.0253	15	420
A 00330	U1-4A	1/4"	1/8"	7/16"	0.0299	25	1000
A 04585	U1-4B	1/4"	1/4"	9/16"	0.0471	25	250
A 01197	U1-4C	1/4"	3/8"	11/16"	0.0714	25	400
A 04628	U1-4D	1/4"	1/2"	7/8"	0.1138	25	400
A 00331	U1-5A	5/16"	1/8"	1/2"	0.0400	25	1000
A 05036	U1-5B	5/16"	1/4"	9/16"	0.0550	25	1000
A 01198	U1-5C	5/16"	3/8"	11/16"	0.0750	25	600
A 05003	U1-6A	3/8"	1/8"	5/8"	0.0652	25	600
A 00332	U1-6B	3/8"	1/4"	5/8"	0.0750	25	600
A 01199	U1-6C	3/8"	3/8"	11/16"	0.0900	25	400
A 04993	U1-6D	3/8"	1/2"	7/8"	0.1350	25	300
A 05034	U1-8A	1/2"	1/8"	3/4"	0.0938	10	240
A 04439	U1-8B	1/2"	1/4"	3/4"	0.1082	10	400
A 00334	U1-8C	1/2"	3/8"	3/4"	0.1191	10	240
A 04780	U1-8D	1/2"	1/2"	7/8"	0.1551	10	240
A 05066	U1-8E	1/2"	3/4"	1-1/16"	0.2281	10	160
A 05035	U1-10B	5/8"	1/4"	7/8"	0.1550	10	240
A 01195	U1-10C	5/8"	3/8"	7/8"	0.1681	10	240
A 04540	U1-10D	5/8"	1/2"	7/8"	0.1892	10	240
A 04827	U1-10E	5/8"	3/4"	1-1/16"	0.2495	5	120
A 05005	U1-12C	3/4"	3/8"	1-1/16"	0.2650	10	160
A 04739	U1-12D	3/4"	1/2"	1-1/16"	0.2861	5	120
A 04740	U1-12E	3/4"	3/4"	1-1/16"	0.3161	5	120



Connector • Union
Flare to Flare



Item No.	Universal Part No.	Flare	Hex		Each Wt.	Inner Qty.	Master Qty.
A 00325	U2-4	1/4"	7/16"	-	0.0261	25	600
A 00326	U2-5	5/16"	1/2"	-	0.0500	25	600
A 00327	U2-6	3/8"	5/8"	-	0.0915	25	400
A 00329	U2-8	1/2"	3/4"	-	0.1407	15	240
A 04845	U2-10	5/8"	7/8"	-	0.2154	10	160
A 04733	U2-12	3/4"	1-1/16"	-	0.3675	10	160

BRASS 45° FLARE FITTINGS & FLANGES | FITTINGS



Connector • Half Union
Flare to NPTF



Item No.	Universal Part No.	Flare	NPTF	Hex	Each Wt.	Inner Qty.	Master Qty.
A 04622	U3-4A	1/4"	1/8"	9/16"	0.0415	25	1000
A 04625	U3-4B	1/4"	1/4"	11/16"	0.0650	25	600
A 04961	U3-4C	1/4"	3/8"	13/16"	0.0812	15	360
A 04927	U3-6A	3/8"	1/8"	5/8"	0.1029	10	400
A 04624	U3-6B	3/8"	1/4"	11/16"	0.0829	25	400
A 04627	U3-6C	3/8"	3/8"	13/16"	0.1000	15	360
A 08104	U3-6D	3/8"	1/2"	1"	0.1630	15	240
A 04928	U3-8B	1/2"	1/4"	3/4"	0.1115	15	240
A 04727	U3-8C	1/2"	3/8"	13/16"	0.1190	15	360
A 04728	U3-8D	1/2"	1/2"	1"	0.1809	15	240
A 04929	U3-10C	5/8"	3/8"	7/8"	0.1597	10	160
A 04819	U3-10D	5/8"	1/2"	1"	0.1950	10	160
A 04977	U3-10E	5/8"	3/4"	1-1/4"	0.2863	10	120



Connector
Internal Flare to External Flare



Item No.	Universal Part No.	Flare	Flare	Hex	Each Wt.	Inner Qty.	Master Qty.
A 05147	UR3-43	1/4"	3/16	5/8"	0.0470	10	400
A 05041	UR3-46	1/4"	3/8"	5/8"	0.0696	15	360
A 08127	UR3-48	1/4"	1/2"	3/4"	0.1118	10	400
A 00479	UR3-64	3/8"	1/4"	13/16"	0.0775	15	360
A 04888	UR3-68	3/8"	1/2"	13/16"	0.1100	15	360
A 04770	UR3-108	1/2"	1/4"	1-1/16"	0.1803	10	160
A 04878	UR3-1012	1/2"	3/8"	1-1/16"	0.2650	10	160
A 04826	UR3-1210	1/2"	5/8"	1-5/16"	0.2405	10	120
A 00480	UR3-84	5/8"	1/2"	15/16"	0.1069	15	360
A 00481	UR3-86	5/8"	3/4"	15/16"	0.1200	15	240
A 04879	UR3-810	3/4"	5/8"	15/16"	0.1685	10	240



Connector • Union
Internal Flare



Item No.	Universal Part No.	Flare	Hex		Each Wt.	Inner Qty.	Master Qty.
A 00385	U4-4	1/4"	5/8"	-	0.0650	10	560
A 00386	U4-6	3/8"	13/16"	-	0.1182	10	240
A 00387	U4-8	1/2"	15/16"	-	0.1750	10	240



Connector • Half Union
External Flare to Solder



Item No.	Universal Part No.	Flare	Solder	Hex	Each Wt.	Inner Qty.	Master Qty.
A 03431	US3-44	1/4"	1/4"	7/16"	0.0250	50	1200
A 03466	US3-45	1/4"	5/16"	7/16"	0.0225	25	1000
A 03494	US3-46	1/4"	3/8"	1/2"	0.0288	25	1000
A 03443	US3-64	3/8"	1/4"	5/8"	0.0698	25	600
A 03464	US3-65	3/8"	5/16"	5/8"	0.0609	25	600
A 03492	US3-66	3/8"	3/8"	5/8"	0.0628	25	600
A 03547	US3-68	3/8"	1/2"	5/8"	0.0615	10	560
A 03504	US3-86	1/2"	3/8"	3/4"	0.1123	25	400
A 03546	US3-88	1/2"	1/2"	3/4"	0.0964	15	360
A 03519	US3-108	5/8"	1/2"	7/8"	0.1601	10	240
A 06601	US3-610	3/8"	5/8"	3/4"	0.0750	10	240
A 02259	US3-810	1/2"	5/8"	3/4"	0.0996	10	240
A 02258	US3-1010	5/8"	5/8"	7/8"	0.1550	10	240
A 02272	US3-1012	5/8"	3/4"	7/8"	0.1500	10	240
A 02378	US3-1014	5/8"	7/8"	1"	0.1656	10	160
A 05307	US3-1212	3/4"	3/4"	1-1/16"	0.2463	5	120
A 05425	US3-1214	3/4"	7/8"	1-1/16"	0.2490	5	160



Connector • Reducing Union
Flare to Flare



Item No.	Universal Part No.	Flare	Flare	Hex	Each Wt.	Inner Qty.	Master Qty.
A 05270	UR2-43	1/4"	3/16"	7/16"	0.0300	15	1080
A 08730	UR2-54	5/16"	1/4"	1/2"	0.0461	10	740
A 01171	UR2-64	3/8"	1/4"	5/8"	0.0718	15	360
A 04981	UR2-65	3/8"	5/16"	5/8"	0.0779	10	400
A 00356	UR2-84	1/2"	1/4"	3/4"	0.1000	15	360
A 00149	UR2-86	1/2"	3/8"	3/4"	0.1267	25	400
A 05334	UR2-106	5/8"	3/8"	7/8"	0.1750	10	240
A 04846	UR2-108	5/8"	1/2"	7/8"	0.1922	15	180
A 04734	UR2-128	3/4"	1/2"	1-1/16"	0.2900	10	120
A 04784	UR2-1210	3/4"	5/8"	1-1/16"	0.3318	10	120



Connector • Union
Internal Flare Swivel



Item No.	Universal Part No.	Flare	Hex		Each Wt.	Inner Qty.	Master Qty.
A 13563	US4-4	1/4"	5/8"	-	0.0798	15	600
A 13564	US4-5	5/16"	11/16"	-	0.0850	15	600
A 13565	US4-6	3/8"	13/16"	-	0.1212	15	360
A 13567	US4-8	1/2"	15/16"	-	0.1750	15	240
A 13568	US4-10	5/8"	1-1/16"	-	0.2700	15	180



Connector

Internal Flare to Extension Solder



Item No.	Universal Part No.	Flare	Each Wt.	Inner Qty.	Master Qty.
A 15725	US5-44	1/4"	-	-	0.0430 25 1000
A 15726	US5-66	3/8"	-	-	0.0740 25 600
A 15727	US5-88	1/2"	-	-	0.1037 20 320
A 15728	US5-1010	5/8"	-	-	0.1600 10 240
A 15729	US5-1212	3/4"	-	-	0.3176 10 120



Connector • Fusible Pipe Plug

NPTFE



Item No.	Universal Part No.	NPTFE	Hex	Melting Temp.	Each Wt.	Inner Qty.	Master Qty.
A 14058	FP-A	1/8"	7/16"	283° F	0.0220	10	1540
A 14059	FP-B	1/4"	9/16"	283° F	0.0350	15	840
A 14060	FP-C	3/8"	11/16"	283° F	0.0840	15	540
A 14017	FP-A	1/8"	7/16"	210° F	0.0240	10	1540
A 14018	FP-B	1/4"	9/16"	210° F	0.0540	15	840
A 14021	FP-C	3/8"	11/16"	210° F	0.0900	15	540
A 15214	FP-A	1/8"	7/16"	168° F	0.0240	10	1540
A 14019	FP-B	1/4"	9/16"	168° F	0.0540	15	840
A 14022	FP-C	3/8"	11/16"	168° F	0.0950	15	540



Connector • Half Union

Flare to NPTFE



Item No.	Universal Part No.	NPTFE	Hex	Melting Temp.	Each Wt.	Inner Qty.	Master Qty.
A 14062	FU-4B	1/4"	9/16"	283° F	0.0470	10	560
A 14064	FU-6C	3/8"	11/16"	283° F	0.1260	10	360
A 14023	FU-4B	1/4"	9/16"	210° F	0.0570	10	560
A 14026	FU-6C	3/8"	11/16"	210° F	0.1220	10	400
A 14024	FU-4B	1/4"	9/16"	168° F	0.0480	10	1080
A 14027	FU-6C	3/8"	11/16"	168° F	0.0980	10	400

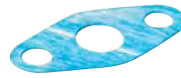


Flange • 2 Bolt-Hole

w/ Serated Gasket Surface



Item No.	Size (in.)	Size B (in.)	F Bolt Hole Centers	Each Wt.	Inner Qty.
A 08314	5/8"	9/16"	1-5/8"	0.4450	1
A 05299	3/4"	11/16"	1-5/8"	0.4200	1
A 09215	7/8"	13/16"	1-5/8"	0.3950	1
A 08315	7/8"	13/16"	2-3/4"	1.0800	1
A 05151	1-1/8"	1-1/16"	2-3/4"	1.1094	1
A 05074	1-3/8"	1-19/64"	2-3/4"	0.9000	1



Gasket • 2 Bolt-Hole

Asbestos-Free Material



Item No.	Size (in.)	Size B (in.)	F Bolt Hole Centers	Each Wt.	Inner Qty.
A 04582	9/16"	1-1/16"	1-5/8"	0.0028	N/A
N 02308	13/16"	1-19/64"	1-5/8"	0.0040	N/A
N 02307	13/16"	1-17/32"	1-3/4"	0.0042	N/A
A 05152	1-3/16"	1-15/16"	2-3/4"	0.0200	20



Flange • 4 Bolt-Hole w/ Tongue, Groove

Diameters 2-3/4" x 2-3/16"



Item No.	Size (in.)	Size B (in.)	F Bolt Hole Centers	Each Wt.	Inner Qty.
A 08629	1-1/8"	1-1/16"	2-1/2"	2.1250	1
A 05150	1-3/8"	1-19/64"	2-1/2"	1.9765	1
A 05148	1-5/8"	1-17/32"	2-1/2"	1.8667	1
A 08632	2-1/8"	1-15/16"	2-1/2"	1.5938	1



Gasket • 4 Bolt-Hole

Asbestos-Free Material



Item No.	Size (in.)	Size B (in.)	F Bolt Hole Centers	Each Wt.	Inner Qty.
A 08628	2-1/16"		2-1/2"	0.0120	N/A



Flange • 4 Bolt-Hole w/ Groove

Diameters 2-25/32" x 2-1/16"



Item No.	Size (in.)	Size B (in.)	F Bolt Hole Centers	Each Wt.	Inner Qty.
A 08630	1-1/8"	1-1/16"	2-1/2"	1.8750	1
A 08631	1-3/8"	1-19/64"	2-1/2"	1.7500	1
A 08261	1-5/8"	1-17/32"	2-1/2"	1.6400	1
A 08633	2-1/8"	1-15/16"	2-1/2"	1.4167	1



Flange • 4 Bolt-Hole

w/ Flat Gasket Surface

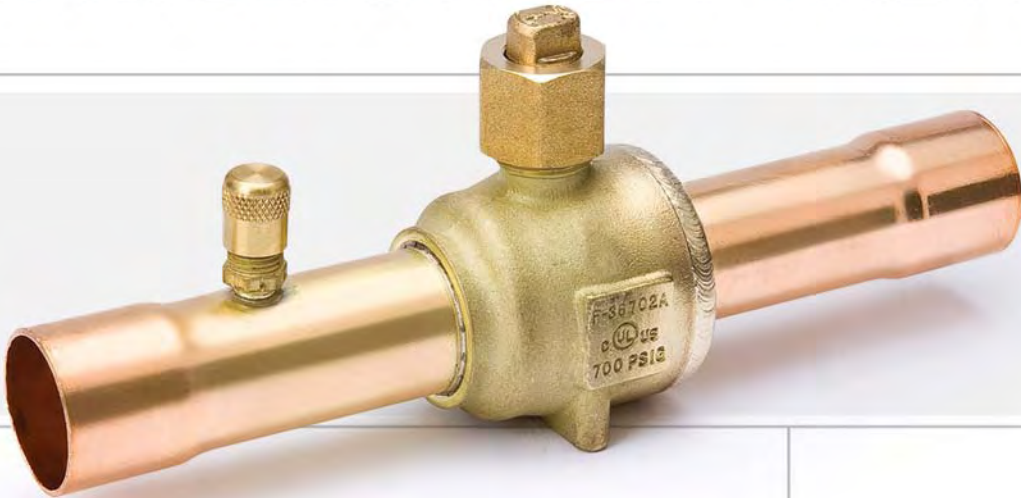


Item No.	Size (in.)	Size B (in.)	F Bolt Hole Centers	Each Wt.	Inner Qty.
A 08624	1-1/8"	1-1/16"	2-1/2"	1.925	1
A 08625	1-3/8"	1-19/64"	2-1/2"	1.875	1
A 08626	1-5/8"	1-17/32"	2-1/2"	1.875	1
A 08627	2-1/8"	1-1/64"	2-1/2"	1.4726	1

Streamline[®]



REFRIGERATION VALVES



Streamline® is a leader in the design and manufacturing of HVAC & Refrigeration Valves. Trusted and respected for products that provide optimum system performance and enhanced serviceability, Streamline valves feature forged brass bodies and are built to the highest quality and testing standards in the industry. Incorporating many proprietary technologies and all of the latest industry innovations and performance features, Streamline HVAC and refrigeration valves are compatible with the newest refrigerants and oils – and deliver flawless operation over a wide range of operating temperatures.



- Ball Valves
- Check Valves
- Compressor Valves
- Packed Line Valves
- Angle Isolation Valves
- Relief Valves & Manifolds

Streamline®

BALL VALVES



Streamline's CYCLEMASTER® ball valves feature full port construction, environmentally friendly, chromium-plated balls for reduced wear and extended seal life, and our exclusive MCM™ seals for industry-leading longevity and low leak rates. Optional features include access ports, brass and valox seal caps, three-way body styles, and motorized actuators to provide local or remote operation. CYCLEMASTER® ball valves are UL /cUL listed and CE certified – and are compatible with all CFC, HCFC and HFC refrigerants and oils. Operating temperature ranges from -40° F to 300° F with maximum working pressure of 700 psig. RoHS compliant.



CYCLEMASTER® Ball Valves Standard



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
AP17859 #	1/4"	0.6650	1	32
AP17860C #	3/8"	0.6600	1	32
AP17861C #	1/2"	0.6800	1	32
AP17862C #	5/8"	0.6750	1	32
AP17863 #	3/4"	1.2132	1	24
AP17864C #	7/8"	1.2292	1	24
AP17865A #	1-1/8"	1.5810	1	27
A 17866	1-3/8"	3.2600	1	10
A 17867	1-5/8"	4.6950	1	4
A 17868	2-1/8"	8.0200	1	2
A 17869	2-5/8" Full Flow	13.4000	1	2
A 17870	3-1/8" Full Flow	21.3100	1	1
A 17871 *	2-5/8"	8.4550	1	2
A 17872 *	3-1/8"	9.1150	1	2
B 34909 ***	3-5/8"	22.8000	1	1
B 34910 ***	4-1/8"	21.0000	1	1

CYCLEMASTER® Ball Valve Features:

- Maximum working pressure (PS): 700 psig, 48 bar
- Working temperature range (TS): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- Full port construction to match line size ID
- Internally equalized ball design
- Rupture-proof encapsulated stem
- MCM™ Seal Technology
- UL/cUL Listed, CE Certified

Reference

- * Reduced Port
- *** Consult Factory
- # Standard product offering includes drilled/tapped feature

Prefix AP Drilled/tapped



CYCLEMASTER® Ball Valves Standard • w/ access Port



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
AQ17859 #	1/4"	0.7200	1	32
AQ17860C #	3/8"	0.6850	1	32
AQ17861C #	1/2"	0.7100	1	32
AQ17862C #	5/8"	0.7200	1	32
AQ17863 #	3/4"	1.4650	1	24
AQ17864C #	7/8"	1.4550	1	24
AQ17865A #	1-1/8"	1.5600	1	27
AC17866	1-3/8"	3.2700	1	10
AC17867	1-5/8"	4.7800	1	4
AC17868	2-1/8"	8.0850	1	2
AC17869	2-5/8" Full Flow	13.8100	1	2
AC17870	3-1/8" Full Flow	21.4200	1	1
AC17871 *	2-5/8"	8.7050	1	2
AC17872 *	3-1/8"	9.2250	1	2

CYCLEMASTER® Ball Valve Features:

- Maximum working pressure (PS): 700 psig, 48 bar
- Working temperature range (TS): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- Full port construction to match line size ID
- Internally equalized ball design
- Rupture-proof encapsulated stem
- MCM™ Seal Technology
- UL/cUL Listed, CE Certified

Reference

- * Reduced Port
- *** Consult Factory
- # Standard product offering includes drilled/tapped feature

Prefix AQ Drilled/tapped



CYCLEMASTER® Ball Valves 3-way



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
AU17860	3/8"	0.7250	1	6
AU17861	1/2"	0.7350	1	6
AU17862	5/8"	0.7400	1	6
AU17863	3/4"	1.4000	1	1
AU17864	7/8"	1.5150	1	12
AU17865	1-1/8"	2.8150	1	12
A 17545	1-3/8"	4.9670	1	1
A 17546	1-5/8"	7.1740	1	1
AU17868	2-1/8"	8.2700	2	2
AU17871 *	2-5/8"	8.8000	2	2
AU17872 *	3-1/8"	11.1000	1	1

CYCLEMASTER® Ball Valve Features:

- Maximum working pressure (PS): 700 psig, 48 bar
- Working temperature range (TS): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- Full port construction to match line size ID
- Internally equalized ball design
- Rupture-proof encapsulated stem
- MCM™ Seal Technology
- UL/cUL Listed, CE Certified

Reference

- * Reduced Port

REFRIGERATION VALVES | BALL VALVES



CYCLEMASTER® Ball Valves Actuated Standard



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
AW17861	1/2"	2.2050	1	1
AW17862	5/8"	2.3750	1	1
AW17863	3/4"	2.8420	1	1
AW17864	7/8"	2.9650	1	1
AW17865A	1-1/8"	3.0750	1	1
AW17866	1-3/8"	6.1400	1	1
AW17867	1-5/8"	7.7400	1	1
AW17868	2-1/8"	13.1350	1	1
AW17869 **	2-5/8" Full Flow	23.4000	1	1
AW17870 **	3-1/8" Full Flow	31.4000	1	1
AW17871 *	2-5/8"	13.5550	1	1
AW17872 *	3-1/8"	14.2400	1	1

CYCLEMASTER® Ball Valve Features:

- Maximum working pressure (PS): 700 psig, 48 bar
- Power Supply: 24 VAC
- Ambient Temperature: -22°F to 130°F, -30°C to 54°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- Full shutoff capability
- Gradual open/close stops line hammer
- Remote operating capability
- Removable actuator for quick change replacement
- Manual override and valve positioning
- Electronic overload protection
- UL/cUL Listed, CE Certified

Reference

* Reduced Port

** Consists of two stacked motors operating in tandem.

WARNING Heater assembly required for low temperature applications.

WARNING Motors not for use in wet or applications where moisture will condense on motor.



CYCLEMASTER® Ball Valves Actuated 3-Way



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
AY17861	1/2"	2.3850	1	1
AY17862	5/8"	2.3850	1	1
AY17863	3/4"	3.5000	1	1
AY17864	7/8"	3.2500	1	1
AY17865	1-1/8"	5.7250	1	1
A 17810	1-3/8"	8.1250	1	1
A 17811	1-5/8"	12.0000	1	1
AY17868	2-1/8"	13.2250	1	1
AY17871 *	2-5/8"	14.0850	1	1
AY17872 *	3-1/8"	14.6350	1	1

CYCLEMASTER® Ball Valve Features:

- Maximum working pressure (PS): 700 psig, 48 bar
- Power Supply: 24 VAC
- Ambient Temperature: -22°F to 130°F, -30°C to 54°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- Full shutoff capability
- Gradual open/close stops line hammer
- Remote operating capability
- Removable actuator for quick change replacement
- Manual override and valve positioning
- Electronic overload protection
- UL/cUL Listed, CE Certified

Reference

* Reduced Port

WARNING Heater assembly required for low temperature applications.

WARNING Motors not for use in wet or applications where moisture will condense on motor.



CYCLEMASTER® Ball Valves Packaged w/ Insulation



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
A 18571	1/4"	0.7200	1	N/A
A 18572	3/8"	0.7000	1	N/A
A 18573	1/2"	0.7200	1	N/A
A 18574	5/8"	0.7300	1	N/A

CYCLEMASTER® Ball Valve Feature:

- Maximum working pressure (PS): 700 psig, 48 bar
- Working temperature range (TS): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- Full port construction to match line size ID
- Internally equalized ball design
- Rupture-proof encapsulated stem
- MCM™ Seal Technology
- Self sealing elastomeric insulation cover
- UL/cUL Listed, CE Certified



CYCLEMASTER® Multi-Split Ball Valves • Flare x ODS



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
A 18448	1/4"	0.7400	1	32
A 18405	3/8"	0.6650	1	32
A 18449	1/2"	0.7800	1	32
A 18406	5/8"	0.7260	1	32

CYCLEMASTER® Multi-Split Ball Valve Features:

- Maximum working pressure (PS): 700 psig, 48 bar
- Working temperature range (TS): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- Full port construction to match line size ID
- Engineered for multi-split A/C and heat pump units
- Rupture-proof encapsulated stem
- UL/cUL Listed, CE Certified



CYCLEMASTER® Multi-Split Ball Valves • Male x Female Flare



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
A 18450	1/4"	0.7500	1	32
A 18429	3/8"	0.7520	1	32
A 18451	1/2"	0.8600	1	32
A 18430	5/8"	0.8560	1	32
A 18452	3/8" x 1/4"	0.7910	1	32
A 18453	5/8" x 1/2"	0.8100	1	32

CYCLEMASTER® Multi-Split Ball Valve Features:

- Maximum working pressure (PS): 700 psig, 48 bar
- Working temperature range (TS): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- Full port construction to match line size ID
- Engineered for multi-split A/C and heat pump units
- Rupture-proof encapsulated stem
- Reducing valves eliminate need for additional joints by using a fitting
- UL/cUL Listed, CE Certified



CYCLEMASTER® Multi-Split Ball Valves • Flare x ODS W/ Insulation



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
A 18611	1/4"	0.7500	1	16
A 18612	3/8"	0.6750	1	16
A 18613	1/2"	0.7900	1	16
A 18614	5/8"	0.7360	1	16

CYCLEMASTER® Multi-Split Ball Valve Features:

- Maximum working pressure (PS): 700 psig, 48 bar
- Working temperature range (TS): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- Full port construction to match line size ID
- Engineered for multi-split A/C and heat pump units
- Rupture-proof encapsulated stem
- Self sealing elastomeric insulation cover
- UL/cUL Listed, CE Certified

REFRIGERATION VALVES | BALL VALVES & BALL VALVE COMPONENTS



CYCLEMASTER® Multi-Split Ball Valves • Male x Female Flare W/ Insulation



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
A 18567	1/4"	0.8500	1	16
A 18568	3/8"	0.9200	1	16
A 18569	1/2"	0.8800	1	16
A 18570	5/8"	0.9600	1	16
A 18652	3/8" x 1/4"	0.8900	1	16
A 18653	5/8" x 1/2"	0.9100	1	16

CYCLEMASTER® Multi-Split Ball Valve Features:

- Maximum working pressure (PS): 700 psig, 48 bar
- Working temperature range (TS): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- Full port construction to match line size ID
- Engineered for multi-split A/C and heat pump units
- Rupture-proof encapsulated stem
- Reducing valves eliminate need for additional joints by using a fitting
- Self sealing elastomeric insulation cover
- UL/cUL Listed, CE Certified

BALL VALVE COMPONENTS



Retrofit Caps

Item No.	Diameter	Each Wt.	Inner Qty.	Mstr Qty.
A 18351	1/4" - 5/8" Straight	0.1400	256	256
A 18352	3/4" - 1-1/8" Straight	0.2175	182	182
A 18353	1-1/8" - 1-3/8" Straight	0.3545	156	156
A 18354 *	1-5/8" - 2-1/8", 2-5/8" - 3-1/8"	0.9225	72	72
A 18355	2-5/8" - 3-1/8" Full Port	1.3505	25	25

Retrofit Cap Features:

- Designed to replace existing caps on installed valves for the full range of CYCLEMASTER® Ball Valve sizes 1/4" to 3 1/8"
- Large nut secures cap assembly to valve neck allowing center post to easily turn for on/off operation and clear visual identification
- Dual o-ring stem seals and base seal to assure positive isolation

Reference

- * Reduced Port Straight



CYCLEMASTER® Ball Valve Insulation Cover

Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
38RBVINS	3/8"	0.1000	10	10
12RBVINS	1/2"	0.1000	10	10
58RBVINS	5/8"	0.1000	10	10
34RBVINS	3/4"	0.1000	9	9
78RBVINS	7/8"	0.1000	10	10
118RBVINS	1-1/8"	0.1000	9	9
138RBVINS	1-3/8"	0.1000	9	9
158RBVINS	1-5/8"	0.1000	—	—
218RBVINS	2-1/8"	0.1000	—	—
258RBVINS	2-5/8"	0.1000	—	—

CYCLEMASTER® Ball Valve Insulation Cover Features:

- Eliminates the time and hassle associated with cutting insulation in the field
- Custom made for Streamline® valves providing the perfect fit
- Elastomeric insulation meets 25/50 Flame & Smoke ratings & ASTM C178
- Made in the USA



CYCLEMASTER® Multi-Split Ball Valve Insulation Cover Self Sealing Elastomeric

Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
MSBVINS	3/4"	0.0950	50	50

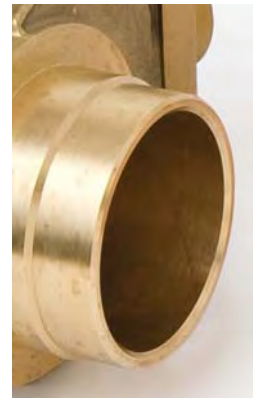
CYCLEMASTER® Multi-Split Ball Valve Insulation Cover Features:

- Eliminates the time and hassle associated with cutting insulation in the field
- Custom made for Streamline® valves providing the perfect fit
- Elastomeric insulation meets 25/50 Flame & Smoke ratings & ASTM C178
- Made in the USA

CHECK VALVES

Streamline®

REFRIGERATION VALVES



Streamline offers a complete line of Inline, Four Bolt, Screw Bonnet, and Magnetic check valves. Inline check valves are machined from drawn brass rod and offer an enhanced internal design for maximum flow and minimum pressure drop. Four Bolt check valves feature forged brass bodies that exceed the most stringent quality standards in the industry. Screw Bonnet check valves feature forged brass bodies with a flexible design that allows easy removal and reassembly of internal components. Magnetic check valves offer DuraForm processing to eliminate the use of braze materials that can overheat and damage internal components.



Check Valves

Flare to Flare



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
A 15620	1/4"	0.1515	1	330
A 15621	3/8"	0.1833	1	330
A 15622	1/2"	0.4282	1	81
A 15623	5/8"	0.5098	1	81

Check Valve Features:

- Maximum working pressure (PS): 700 psig, 48 bar
- Working temperature range (TS): -40°F/300°F, -40°C/149°C
- Pressure to open: < 1 psi
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, CE Certified
- PTFE seat for positive isolation and pulsation dampening
- Enhanced internal design for maximum flow and minimum pressure drop



Check Valves

Solder to Solder



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
A 15628	1/4"	0.1340	1	330
A 15629	3/8"	0.1318	1	330
A 15630	1/2"	0.3732	1	108
A 15631	5/8"	0.3551	1	108

Check Valve Features:

- Maximum working pressure (PS): 700 psig, 48 bar
- Working temperature range (TS): -40°F/300°F, -40°C/149°C
- Pressure to open: < 1 psi
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, CE Certified
- PTFE seat for positive isolation and pulsation dampening
- Enhanced internal design for maximum flow and minimum pressure drop



Check Valves

Solder to Solder • Extended Ends



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
A 15632	1/4"	0.1562	1	68
A 15633	3/8"	0.1782	1	68
A 15634	1/2"	0.4300	1	68
A 15635	5/8"	0.4824	1	68

Check Valve Features:

- Maximum working pressure (PS): 700 psig, 48 bar
- Working temperature range (TS): -40°F/300°F, -40°C/149°C
- Pressure to open: < 1 psi
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, CE Certified
- PTFE seat for positive isolation and pulsation dampening
- Enhanced internal design for maximum flow and minimum pressure drop



Four-Bolt Check Valves



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
B 34235	7/8"	2.4435	1	7
B 34236	1-1/8"	2.2650	1	7
B 34237	1-3/8"	5.2300	1	6
B 34238	1-5/8"	4.6480	1	6
B 34239	2-1/8"	12.3100	1	3
B 34240	2-5/8"	28.0400	1	1
B 34241	3-1/8"	27.2300	1	1

Four-Bolt Check Valve Features:

- Maximum working pressure (PS): 700 psig, 48 bar
- Working temperature range (TS): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, CE Certified
- 100% tested
- Design features easy removal & reassembly of internal components
- Forged brass body exceeds the most stringent quality standards
- Horizontal or vertical installation (not to be installed with bonnet facing down)
- "Y" type design provides minimal pressure drop & increased flow capacity
- Non-asbestos gasket material ensures seal integrity, while a heat-stabilized PTFE seat provides seal across wide temperature ranges
- Includes standard 2 lb spring



Screw Bonnet Check Valves



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
A 17953	1/4"	0.5800	1	24
A 17954	3/8"	0.5740	1	24
A 17955	1/8"	0.5315	1	24
A 17956	5/8"	0.5250	1	24
A 17958	7/8"	0.8650	1	24
AT17953*	1/4"	0.6100	1	25
AT17954*	3/8"	0.6200	1	25
AT17955*	1/2"	0.5850	1	25
AT17956*	5/8"	0.6550	1	25
AT17958*	7/8"	1.0850	1	12

Screw Bonnet Check Valve Features:

- Maximum working pressure (PS): 700 psig, 48 bar
- Working temperature range (TS): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, CE Certified
- 100% tested
- Design features easy removal and reassembly of internal components
- Forged brass body exceeds the most stringent quality standards
- Designed to provide minimal pressure drop and increased flow capacity
- PTFE gasket

Reference

- * Extended End

Prefix AG Includes 5 lb. spring

Prefix AT Includes 10lb. spring



Magnetic Check Valves



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
A 17934	1/4"	0.2000	1	180
A 17935	3/8"	0.2045	1	180
A 17936	1/2"	0.3460	1	120
A 17937	5/8"	0.3440	1	120
A 17938	3/4"	0.8740	1	48
A 17939	7/8"	0.5850	1	48
A 17940	1-1/8"	1.6120	1	24
A 17941	1-3/8"	2.7430	1	24
A 17942	1-5/8"	3.9055	1	12
A 17943	2-1/8"	6.0000	1	12
A 17944	2-5/8"	7.0000	1	6
A 17981	3-1/8"	7.4250	1	6

Magnetic Check Valve Features:

- Maximum working pressure (PS): 650 to 800
- Working temperature range (TS): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, CE Certified
- Built-in 30 mesh stainless steel screen
- Internal components installed with DuraForm Technology
- Mechanically formed solder cup stops for easy installation
- Flexible for installation in vertical or horizontal position
- Hermetically formed solid copper body assures zero leak potential

COMPRESSOR VALVES



Available in both forged brass and cast iron, our compressor valves and kits are manufactured to the strictest quality standards in the industry. Built with valve openings designed for maximum flow and minimum pressure drop, specialized asbestos-free valve packing material allows component accessibility without refrigerant loss. Offering a complete line of compressor valves, we furnish compressor valves machined to fit standard dimensions and several special flange dimensions used by many manufacturers. Direct OEM replacement part kits are available for leading compressor manufacturers in the industry.



- Maximum working pressure (PS): 700 psig, 48 bar
- Working temperature range (TS): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants & oils
- UL/cUL Recognized, CE Certified
- 100% tested
- Asbestos-free valve packing
- Valve openings designed for maximum flow and minimum pressure drop



Brass Compressor Valves
Double Port, 45° Flare



Item No.	Valve Kit*	Diameter	Each Wt.	Inner Qty.	Master Qty.
A 16302	A 17518	3/8"	1.1990	48	48
A 16303	A 17519	1/2"	1.1658	48	48
A 16304	A 17520	5/8"	1.2344	48	48



Brass Compressor Valves
Straight Port, 45° Flare



Item No.	Valve Kit*	Diameter	Each Wt.	Inner Qty.	Master Qty.
A 13166	—	3/4"	1.7762	20	20



Brass Compressor Valves
Double Port, Solder



Item No.	Valve Kit*	Diameter	Each Wt.	Inner Qty.	Master Qty.
A 16307	A 17510	3/8"	0.6902	48	48
A 16308	A 17511	1/2"	0.8600	48	48
A 16309	A 17512	5/8"	0.8800	48	48



Brass Compressor Valves
Straight Port, Solder



Item No.	Valve Kit*	Diameter	Seat Position	Each Wt.	Inner Qty.	Master Qty.
A 16310	—	3/4"	Front	1.6387	20	20
A 16311	A 17515	7/8"	Front	1.6300	20	20
B 32197	A 17529	7/8"	Middle	1.4177	20	20
A 15500	—	1-1/8"	Back	1.4278	20	20
A 16312	A 17516	1-1/8"	Front	1.6600	20	20

* Valve Kits include valve, gasket, and bolts.

REFRIGERATION VALVES | COMPRESSOR VALVES



Brass Compressor Valves
Flange Union, Solder



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
A 16313	3/4"	3.9287	10	10
A 16314	7/8"	3.9031	10	10
A 16315	1-1/8"	3.8826	10	10
A 16316	1-3/8"	3.6548	10	10



Brass Compressor Valves
Four-Bolt Mounting, Solder
Flat Gasket Surface



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
B 32807	1-1/8"	3.9950	10	10
B 32808	1-3/8"	3.9750	10	10
B 32930	1-5/8"	4.1300	10	10



Brass Compressor Valves
Four-Bolt Mounting, Access Port



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
A 17495	2-1/8"	11.8400	3	3



Cast Iron Flanges
Four-Bolt



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
B 34987	2-5/8"	28.2100	2	2
B 34988	3-5/8"	33.9300	1	1



Cast Iron Compressor Valves
Four-Bolt Flange Union, Solder



Item No.	Diameter	Each Wt.	Inner Qty.	Master Qty.
A 15246	1-5/8"	9.3695	6	6
A 16321	1-5/8"	8.7149	6	6
B 32337	1-5/8"	9.0694	6	6
A 15586	2-1/8"	18.2828	4	4
A 16324	2-1/8"	18.2828	4	4
B 33572	2-1/8"	17.4857	4	4
B 34671	2-1/8"	17.2750	4	4
A 15587	2-5/8"	20.2966	4	4
A 16366	2-5/8"	33.1778	2	2
B 33568	2-5/8"	20.2309	4	4
B 34661	2-5/8"	30.7950	2	2
A 15588	3-1/8"	33.2239	2	2
A 16365	3-1/8"	33.2239	2	2
B 33569	3-1/8"	32.3819	2	2
A 17496	3-5/8"	34.0100	1	1
B 33788	3-5/8"	34.0100	1	1
B 34670	3-5/8"	40.5100	1	1
A 15589	4-1/8"	49.8018	1	1



RELIEFMASTER® Change-Over Manifold

Straight Thread

Item No.	Size (in)	x Size (in)	Each Wt.	Inner Qty.	Master Qty.
B 34550*	7/8"-14UNF 2A	7/8"-14UNF 2B	1.4630	20	20
B 34559	1-5/16" - 12UNF 2A	1-5/16"-12UNF 2B	3.1350	9	9
B 34654	1-5/8" - 12UNF 2A	1-5/8" - 12UNF 2B	3.6435	6	6

RELIEFMASTER® Change-Over Manifold Features:

- Maximum working pressure (PS): 700 psig, 48 bar
- Working temperature range (TS): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- Allows easy replacement of attached relief valves and rupture discs while the system is operative
- Dual internal seat ensure complete isolation of individual circuits
- Available with various inlet connections
- Multiple cap options available

Reference

- * S 36284, Brass Seal Cap replacement

Prefixes for standard settings:

AD/BD = 235 psig.	AG/BG = 350 psig.	AJ/BJ = 425 psig.
AW/BE = 300 psig.	AH/BH = 400 psig.	AJ/BJ = 450 psig.

Streamline[®]

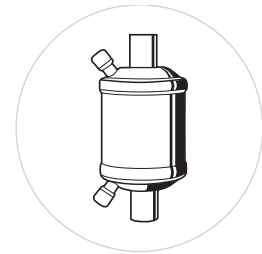
ENGINEERED FROM QUALITY MATERIALS TO EXACTING
SPECIFICATIONS FOR PRECISION FIT, LONG LIFE AND
RELIABLE SYSTEM PROTECTION.



PROTECTION DEVICES



► Streamline® protection devices include filter driers, sight glasses and strainers engineered to perform reliably in extreme environments. Like all Streamline products, each is built from the highest quality materials to exacting specifications for precision fit and long service life.



- Filter Driers
- Sight Glasses/Moisture Indicators
- Strainers

Streamline®

FILTER DRIERS



Streamline DRYMASTER® filter driers provide guaranteed durability in the most aggressive environmental applications. Designed to meet the requirements of high-pressure refrigerants while providing maximum protection from contaminants, Streamline filter driers are high-retention filters for removal of particulate as small as 25 microns. Features include high pressure shell and connections and powder paint finish approved for marine applications.



Filter Driers
Liquid Line Flare



Item No.	Universal Part No.	x Size (in)	Each Wt.	Inner Qty.	Master Qty.
A 16600	FL-032	1/4"	0.4830	1	24
A 16601	FL-033	3/8"	0.5570	1	24
A 16606	FL-052	1/4"	0.7830	1	24
A 16607	FL-053	3/8"	0.8658	1	25
A 16608	FL-082	1/4"	1.0086	1	16
A 16609	FL-083	3/8"	1.0826	1	16
A 16610	FL-084	1/2"	1.1486	1	25
A 16612	FL-162	1/4"	1.8803	1	12
A 16613	FL-163	3/8"	2.0431	1	12
A 16614	FL-164	1/2"	2.0953	1	12
A 16615	FL-165	5/8"	2.2051	1	12
A 16618	FL-303	3/8"	3.3323	1	10
A 16619	FL-304	1/2"	3.3983	1	10
A 16620	FL-305	5/8"	3.5003	1	10
A 16623	FL-413	3/8"	3.9275	1	10
A 16624	FL-414	1/2"	3.7315	1	8
A 16625	FL-415	5/8"	3.8373	1	8

DRYMASTER® Filter Drier Features:

- Driers are UL/cUL Listed and CE Certified for maximum working pressures up to 667 psig.
- Maximum working temperature: 160°F/70°C
- Liquid Line models offer solid core design, composed of 80% molecular sieves, 20% activated alumina for exceptional moisture and acid removal
- Compatible with all CFC, HCFC and HFC refrigerants and oils, and refrigerants requiring XHII desiccant
- UL/cUL Listed, CE Certified



Heat Pump Driers

Flare Connection



Item No.	Universal Part No.	x Size (in)	Each Wt.	Inner Qty.	Master Qty.
A 17388	HPF-083	3/8"	1.5000	1	16
A 17390	HPF-163	3/8"	1.7500	1	12
A 17983	HPF-164	1/2"	2.2250	1	12
A 17984	HPF-165	5/8"	2.1790	1	12

DRYMASTER® Heat Pump Drier Features:

- Driers are UL/cUL Listed and CE Certified for maximum working pressures up to 667 psig.
- Maximum working temperature: 160°F/70°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils, and refrigerants requiring XHII desiccant
- UL/cUL Listed, CE Certified



Heat Pump Driers

Solder Connection



Item No.	Universal Part No.	x Size (in)	Each Wt.	Inner Qty.	Master Qty.
A 17389	HPS-083	3/8"	1.5000	1	16
A 17391	HPS-163	3/8"	3.1000	1	12
A 17392	HPS-164	1/2"	3.1000	1	12
A 17985	HPS-165	5/8"	3.1000	1	12

DRYMASTER® Heat Pump Drier Features:

- Driers are UL/cUL Listed and CE Certified for maximum working pressures up to 667 psig.
- Maximum working temperature: 160°F/70°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils, and refrigerants requiring XHII desiccant
- UL/cUL Listed, CE Certified



DRYMASTER® Filter Drier Cores

48 Cubic Inch

Item No.	Universal Part No.	x Size (in)	Each Wt.	Inner Qty.	Master Qty.
P 36818	48-CGH	48 Cu. In.	1.6800	1	10
P 36819	48-CGM	48 Cu. In.	N/A	1	10

DRYMASTER® Filter Drier Core Features:

- Universal replacement for 48 cubic inch filter drier cores
- **P 36818:** 48-CGH High Capacity Core offers 100% molecular sieve composition for high drying capacity
- **P 36819:** 48-CGH Molecular Sieve Core offers 80% molecular sieve and 20% activated alumina composition designed for polyester oils
- For use on liquid or suction line of system
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- Each core is packaged with filter pads and gasket set



DRYMASTER® Filter Driers
Replaceable Core Shells



Item No.	Size (in)	Core Size.	No. of Cores
A 18583	5/8"	48	1
A 18584	7/8"	48	1
A 18585	1-1/8"	48	1
A 18586	1-3/8"	48	1
A 18587	1-5/8"	48	1
A 18588	2-1/8"	48	1
A 18589	7/8"	96	2
A 18590	1-1/8"	96	2
A 18591	1-3/8"	96	2
A 18592	1-5/8"	96	2
A 18593	2-1/8"	96	2
A 18604	1-1/8"	144	3
A 18605	1-3/8"	144	3
A 18606	1-5/8"	144	3
A 18607	2-1/8"	144	3
A 18608	1-3/8"	192	4
A 18609	1-5/8"	192	4
A 18610	2-1/8"	192	4

DRYMASTER® Replaceable Core Shell Features:

- For use in liquid and suction lines
- Compatible with all fluorinated refrigerants
- Powder coat withstands 500 hour salt spray per ASTM B 117
- Pressure rating of 700 psi
- UL/cUL and CE certifications
- RoHS compliant
- Slotted Aluminum lid for ease of assembly
- Stainless Steel bolts and plug

SIGHT GLASS / MOISTURE INDICATORS



Streamline's sight glasses provide accurate identification and better visibility of system conditions through a large viewing window with indicator. Designed for maximum flow and minimum pressure drop, the hermetically sealed models are built of solid brass for connection size 1/4" to 7/8". Larger connection sizes, 1-1/8" to 2-1/8", are available in a copper-bodied design.



- Maximum working pressure (PS): 700 psig, 48 bar
- Working temperature range (TS): -40°F/185°F, -40°C/85°C
- Compatible with all CFC, HCFC and HFC refrigerants & oils
- UL/cUL Recognized, CE Certified
- Designed for maximum flow and minimum pressure drop
- Large viewing window and indicator for better visibility
- Provides accurate identification of system conditions



Sight Glass / Moisture Indicators

Hermetically Sealed, Solder x Solder
Extended Tube,
Solid Brass Construction



Item No.	Size (in)	Each Wt.	Inner Qty.	Master Qty.
A 18114	1/4"	0.3050	1	56
A 18115	3/8"	0.3800	1	56
A 18116	1/2"	0.4950	1	56
A 18117	5/8"	0.5200	1	56
A 18118	3/4"	0.5600	1	48
A 18119	7/8"	0.4080	1	48



Sight Glass / Moisture Indicators

Replaceable Element, Copper Body
Solder x Solder



Item No.	Size (in)	Each Wt.	Inner Qty.	Master Qty.
A 18124	1-1/8"	0.6700	1	N/A
A 18125	1-3/8"	0.6700	1	N/A
A 18126	1-5/8"	0.6700	1	N/A
A 18127	2-1/8"	0.6700	1	N/A



Sight Glass / Moisture Indicators

Hermetically Sealed, Solder x Solder
Extended Tube
Copper Body



Item No.	Size (in)	Each Wt.	Inner Qty.	Master Qty.
A 18120	1-1/8"	0.5850	1	48
A 18121	1-3/8"	0.7530	1	24
A 18122	1-5/8"	1.0050	1	24
A 18123	2-1/8"	1.4000	1	20



Sight Glass / Moisture Indicators

Hermetically Sealed, Flare x Flare
Solid Brass Construction



Item No.	Size (in)	Each Wt.	Inner Qty.	Master Qty.
A 18101	1/4"	0.3300	1	54
A 18102	3/8"	0.3800	1	54
A 18103	1/2"	0.5200	1	54
A 18104	5/8"	0.5400	1	54



Sight Glass / Moisture Indicators

Hermetically Sealed, Flare x Swivel
Solid Brass Construction



Item No.	Size (in)	Each Wt.	Inner Qty.	Master Qty.
A 18110	1/4"	0.3500	1	N/A
A 18111	3/8"	0.3800	1	N/A
A 18112	1/2"	0.5600	1	N/A
A 18113	5/8"	0.6300	1	N/A



Sight Glass / Moisture Indicators

Hermetically Sealed, M x F Flare
Solid Brass Construction



Item No.	Size (in)	Each Wt.	Inner Qty.	Master Qty.
A 18106	1/4"	0.3200	1	N/A
A 18107	3/8"	0.4700	1	N/A
A 18108	1/2"	0.4700	1	N/A

STRAINERS



Streamline's innovative design for strainers incorporates forged brass construction with multiple screen options to provide solutions for both refrigeration and water system needs.



- Maximum working pressure (PS): 700 psig, 48 bar
- Working temperature range (TS): -40°F/185°F, -40°C/85°C
- UL/cUL Listed, CE Certified
- Compatible with all CFC, HCFC and HFC refrigerants and oils



Strainers
Copper Inline



Item No.	Size (in)	Each Wt.	Inner Qty.	Master Qty.
A18025	3/8"	0.06	25	400



Strainers
Brass Y Type NPT Connection
Forged brass construction



Item No.	Size (in)	Screen Mesh	Each Wt.	Inner Qty.	Master Qty.
ASF18071	3/8"	20	NA	NA	NA
ASH18071	3/8"	50	NA	NA	NA
ASK18071	3/8"	100	NA	NA	NA
ASF18073	1/2"	20	NA	NA	NA
ASH18073	1/2"	50	NA	NA	NA
ASK18073	1/2"	100	NA	NA	NA



Strainers
Brass Y Type ODS Connection
Forged Brass Construction



Item No.	Size (in)	Screen Mesh	Each Wt.	Inner Qty.	Master Qty.
ASF18070	3/8"	20	NA	NA	NA
ASH18070	3/8"	50	NA	NA	NA
ASK18070	3/8"	100	NA	NA	NA
ASF18072	1/2"	20	NA	NA	NA
ASH18072	1/2"	50	NA	NA	NA
ASK18072	1/2"	100	NA	NA	NA
ASF18074	5/8"	20	NA	NA	NA
ASH18074	5/8"	50	NA	NA	NA
ASK18074	5/8"	100	NA	NA	NA

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